Roundtable on Sustainable Palm Oil
New Planting Procedure
Summary of Assessment Report and Management Plan

PT UNITED AGRO INDONESIA

Dadahup District, Kapuas Regency,
Central Kalimantan
Indonesia

Prepared by :
PT United Agro Indonesia

April 2020

CHAPTER 1. OVERVIEW AND BACKGROUND

1.1. Area of New Planting and Development Plan

PT. United Agro Indonesia (PT. UAI) is one of the national oil palm plantations which is administratively located in Dadahup District, Kapuas Regency, Central Kalimantan Province. PT. UAI in its operation has obtained permission from the Regent of Kapuas No. SK 356/ADMINSDA/2012, August 14, 2012 in Dadahup District area 4.000 Ha and SK 107A/ DMINSDA/2015, January 30, 2015 in Dadahup District area 2.723,55 Ha. Permit area of PT. UAI is a safe category in the long term because it includes other areas of use (APL) or agricultural area. Geographically PT. UAI is located at position 114° 34' 60" - 114° 44' 23" BT and 2° 27' 48" - 2° 41' 30" LS (Figure 1 and Figure 2).

Until now, the planted area in PT UAI is 2446.70 Ha with HCV area of 573.62 Ha (HCV 1 – 6), and HCS outsite HCV 30.58 Ha. So the area that has not yet been cleared or proposed for the New Planting Procedure is 3,702.20 Ha. In oil palm land cover in the same year there were differences in area, where the HCV document (2016) was 2,353.44 ha and the NPP document (basically the 2019 LUCA document), covering 2,446.70 ha. This is due to differences in the use of map sources, where the HCV study uses Landsat imagery while LUCA uses Sentinel imagery (in more detail).

PT UAI has completed a HCV study with an area of 6,723.55 Ha in 2016 and has been satisfactory by the HCVRN in March 2020.

Based on the Map of Forest and Waters Region of Central Kalimantan Province Scale 1 : 250,000 (SK.529/Menhut-II/2012) Other Areas of Use (APL, Figure 3), based on The Kapuas Year Regency Spatial Pattern Plan Map 2014 – 2034 (Figure 4) is an agricultural area. Whereas based on the Indicative Map of Postponement of Granting New Permits (PIPPIB) Revision VIII on May 27, 2015 (Figure 5) Not included in the moratorium area.

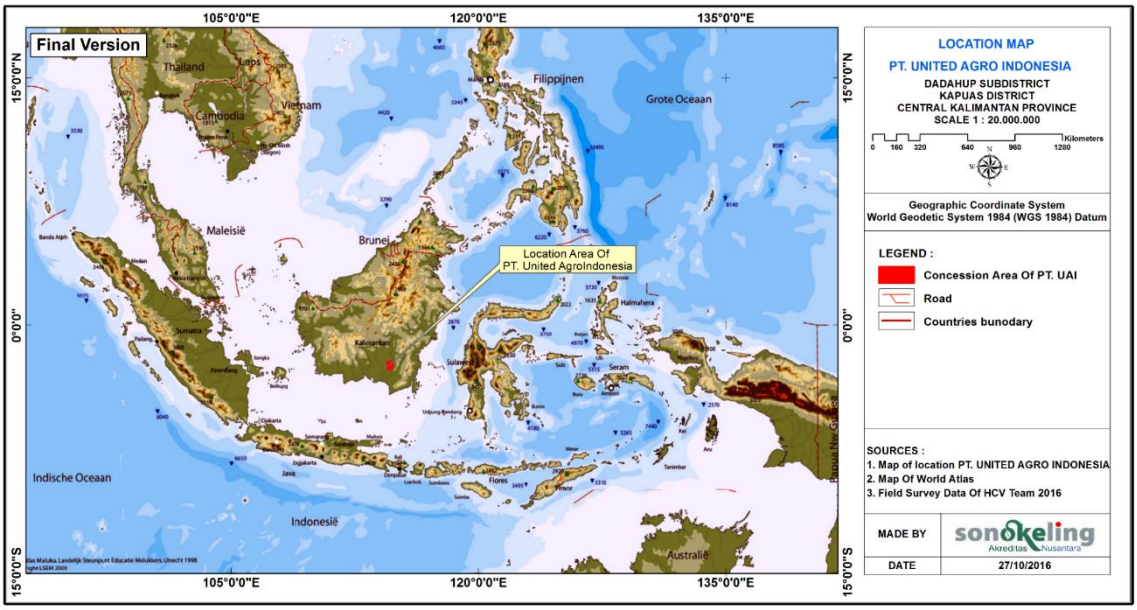


Figure 1. Map of Location permit area of PT UAI in Indonesia

PT UAI's location permit area is directly adjacent to the KHG, indicating that the area has a very important role as a supporter of the KHG, which is important for water management for the peatland ecosystem. This means that the area to be managed becomes part of the buffer zone

of the KHG area. From the results of the assessment indicate that the area of additional permits of PT UAI still contains HCV both for aspects of ecosystem diversity, environmental services and social culture, this certainly must be considered in the development activities of oil palm plantations that will be carried out. Although the natural conditions of biodiversity habitats have been fragmented, they still provide supporting functions for protected areas and the ecosystem services they contain. In this regard, the risk of company operations in the region includes High Risk

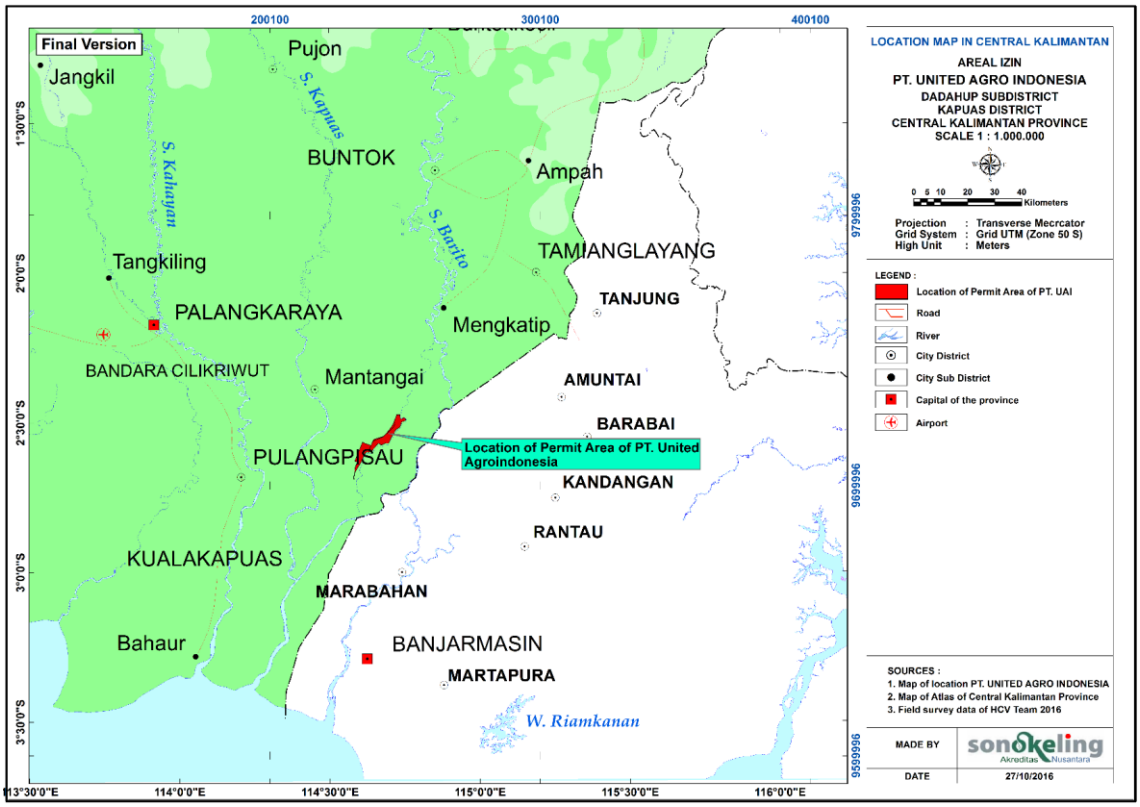


Figure 2. Map of Location permit area of PT UAI in Central Kalimantan Province

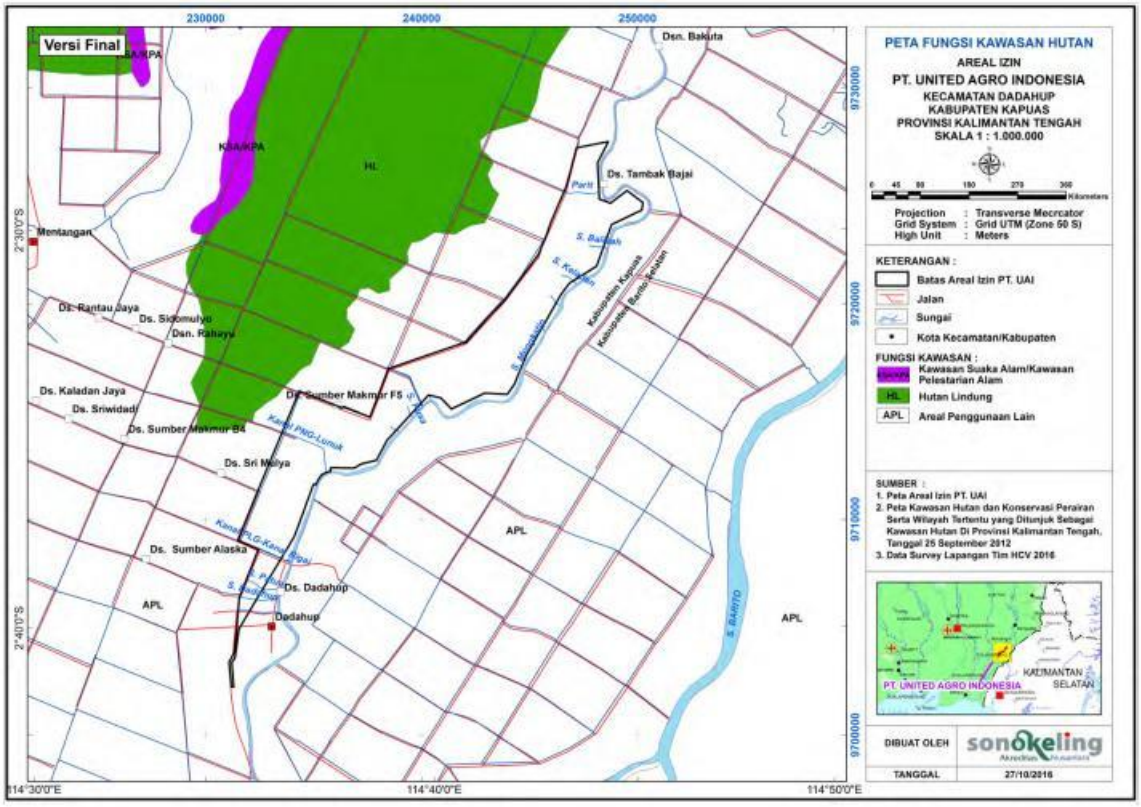


Figure 3. Map of Regional Function in the Permit Area of PT. UAI According to Map of Forest and Aquatic Regions of Central Kalimantan Province

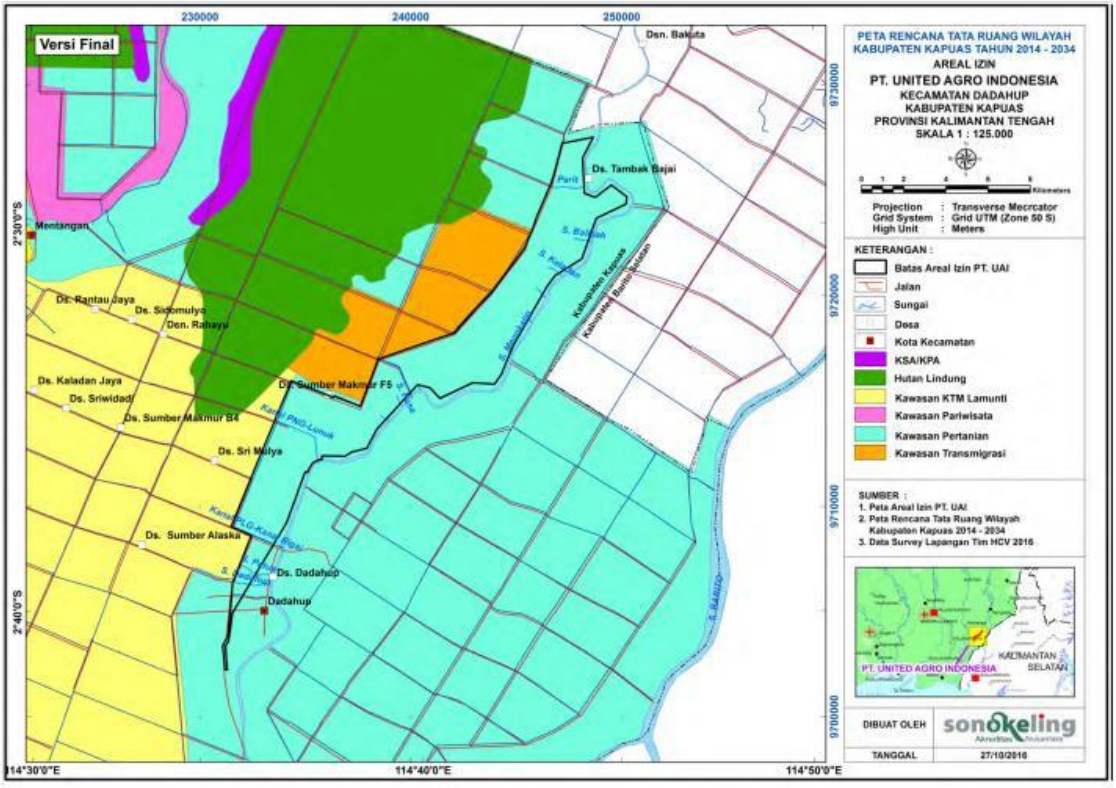


Figure 4. PT UAI based on the 2014 - 2034 Kapuas District Spatial Plan Pattern Map

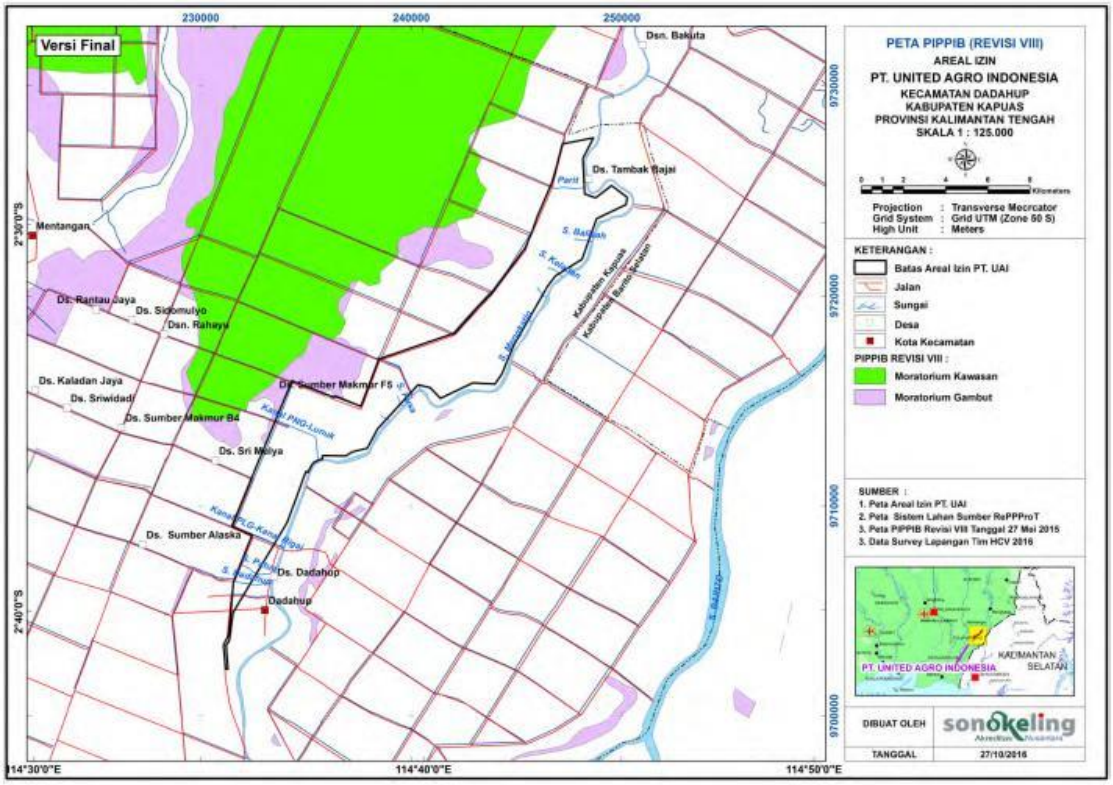


Figure 5. PT UAI based on the Indicative Map of Postponement of Granting New Permits (PIPPIB) Revision VIII on May 27, 2015

1.2. Landsystem and Soil

Based on the Landsystem Map of RePPProT (1987) it can be seen that in the permit area of PT. UAI consists of 1 (one) land system, namely KHY (Kahayan) covering an area of 6,723.55 Ha (100%); while the land system at the boundary of the landscape consists of 12 (twelve) types, i.e. BKN (Bakunan), BRH (Barah), BWN (Bawin), GBT (Gambut), KHY (Kahayan), MDW (Mendawai), PKU (Pakau), PMG (Paminggir), PST (Pulau Sebatik), SBG (Sebangau), TWB (Tewai Baru) dan TWH (Teweh), as presented in Figure 6.

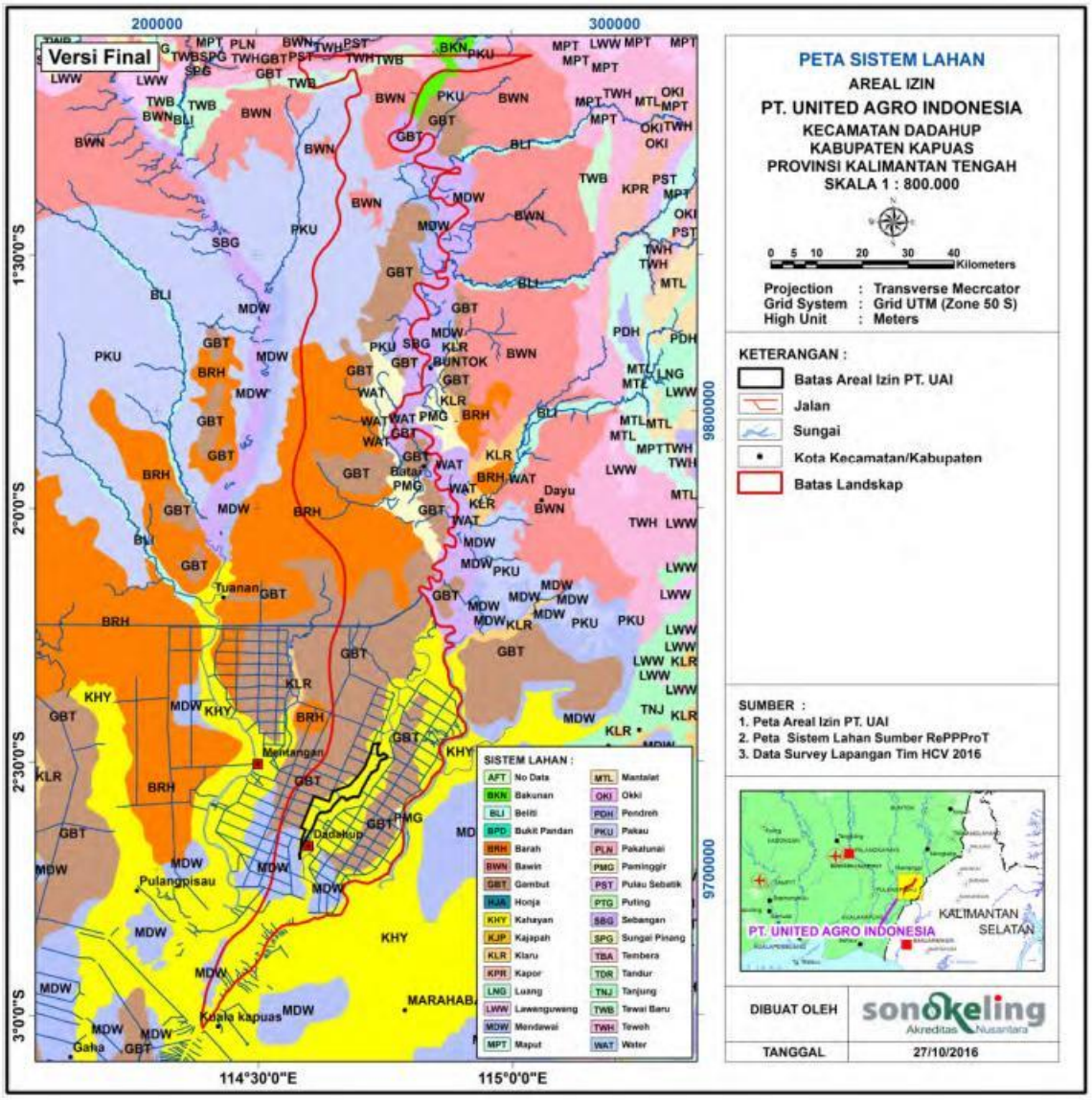


Figure 6. Map of Land Permit Area System of PT. UAI

Based on the Landsystem Map of RePPProT (1988), the association of soil types found in the permit area of PT. UAI consists of one type, namely Tropaquepts Fluvaquents and Sulfaquents (Alluvial) covering 6,723.55 Ha (100%); while the surrounding area consists of 12 different types of soil associations, as shown in Figure 7.

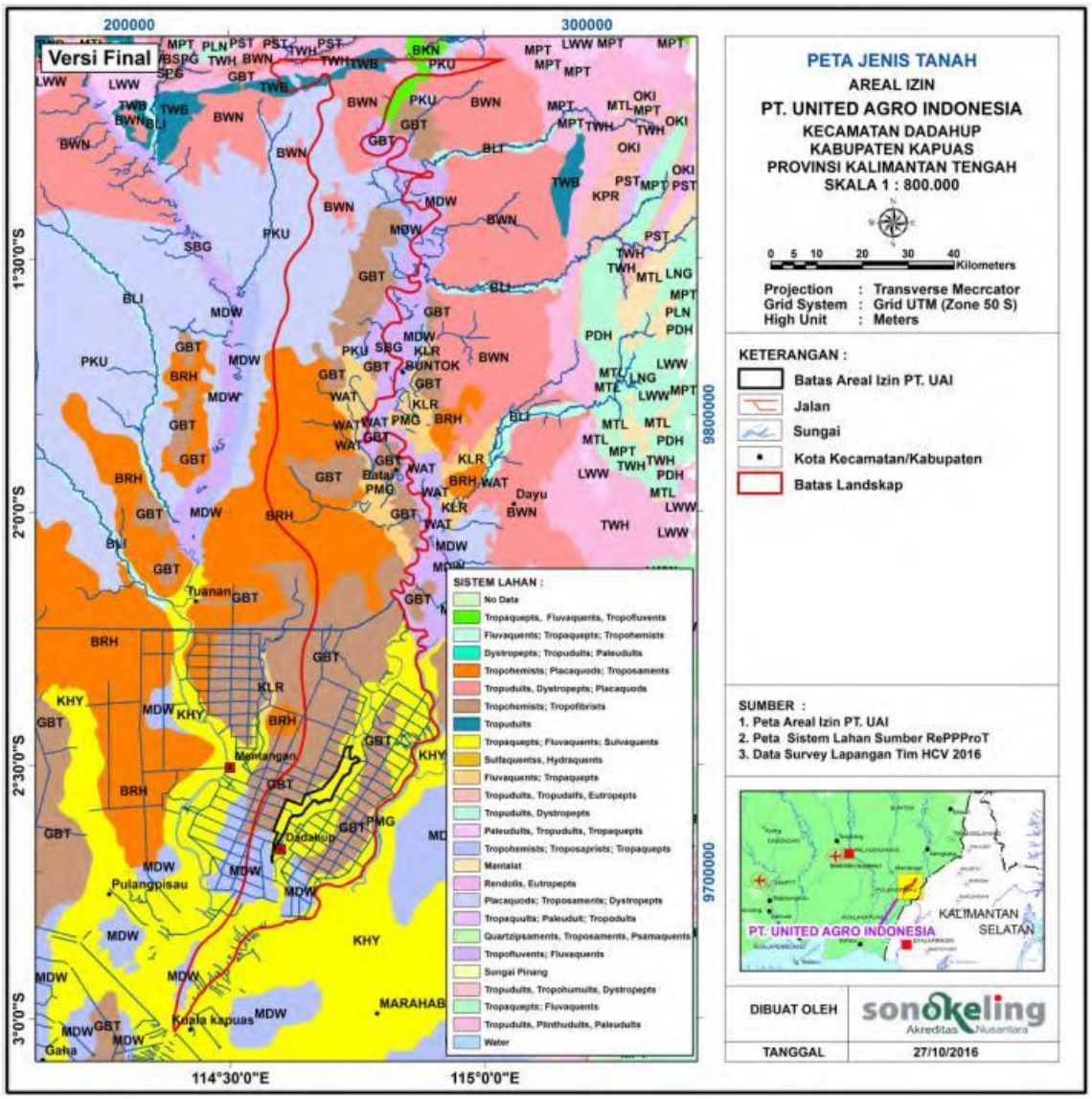


Figure 7. Map of Soil Types in and around the Permit Area of PT. UAI

1.3. Slope

Altitude in and around the permit area of PT. UAI ranges between 9 - 34 masl. Based on the slope class, the slope class in the PT. UAI consists of one type, namely 0-10% slope class covering an area of 6,723.55 Ha (100 %) and around it consists of one type also namely 0-10% slope class (Figure 8).

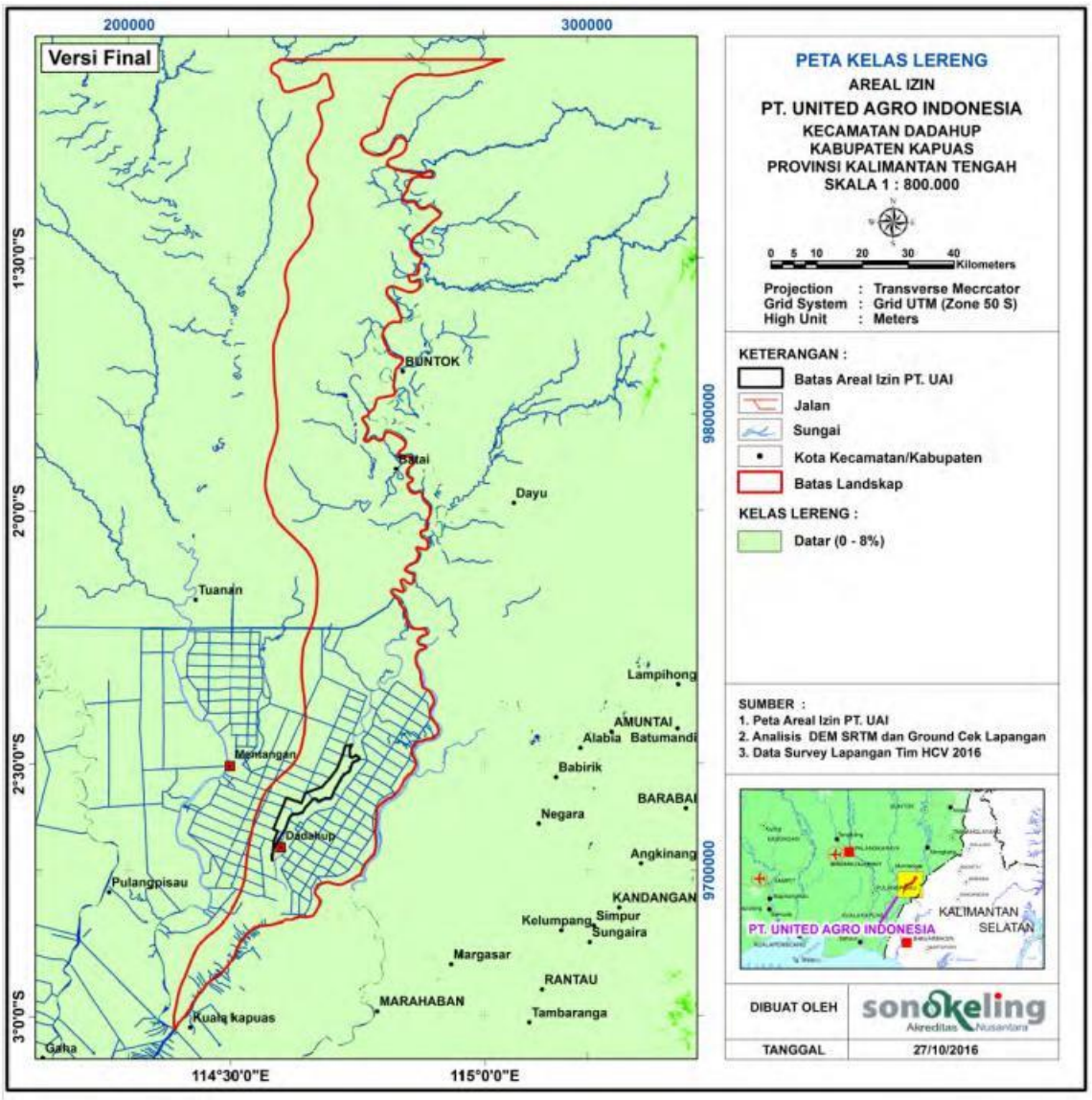


Figure 8. Map of Slope Classes in and around the Permit Area of PT. UAI

CHAPTER 2. ASSESSMENT PROCESS AND METHODS

2.1. SEIA Assessment

a. Assessor Credentials

1) AMDAL (Environtment Impact Assesment) conducted by : CV. Green Enviro Consultan (No. Registration 0113/LPJ/AMDAL-1/LRK/KLH)

   Addres : Jl. G. Obos XIV Komplek Perumahan Sabrina Blok C No. 44, Palangkaraya, Central Kalimantan - Indonesia.

   Personal in Charge : Ahmad Junaidi, ST. (Director)

   Composition team :

Leader	: Ir. Muhammad Wahyudin, MSi.
Member	: Ahmad Junaidi, ST.
	Anwar Fauzi S.,Sy, S.Pi.
	Yulian Mara Alkusma, S.Hut.
	Ir. H. Hermansyah, M.Si.
	Ir. H. Setiarno, MP.
GeoPhysical, Chemistry, Biology	: Susanti Indah Lestari, S.Si.
Social	: Bayu Ilmiawan
Public Health	: Riko Izami, SKM., M.Kes.

2) SIA (Social Impact Assessment) conducted by : by Joko Mijiarto, S.Hut., M.Si.

b. Methods

b.1. Location and Times

Environtment Impact Assesment Document approved by the Regent of Kapuas No. 190/BLH/2015, March 5, 2015. The SIA study at PT UAI was conducted in March 2020 with field data collection activities carried out on December 2019. SIA Document was conducted March 2020 is a update SIA document conducted March 2016.

Village Assessment including : Dadahup Subdistricts namely Dadahup Village, Sumber Alaska, Tambak Bajai, Sumber Makmur and Sri Mulya, Kapuas District, Central Kalimantan Province.

b.2. Method of collecting data

Data collection and excavation in the Social Impact Assessment (SIA) study was carried out with the Rapid Rural Assessment (RRA) technique that combines in-depth interviews, Focus Group Discussions (FGD), questionnaire distribution and observation. In order to ensure the validity of information, the principle of triangulation (multiple data sources) and data saturation (no more changes in the data collected) are used in this study.

Secondary Data Collection

Secondary data were taken from various literary studies or literature by collecting and studying related documents. Materials used in this study include reports related to studies of social aspects (EIA documents, RKL / RPL documents, Kapuas Dalam digit District Documents, Dadahup Subdistrict Numbers in Numbers, various company documents about: Corporate Social Responsibility (CSR), Standard Operational Procedure (SOP) (Environment, Health and Work Safety / LK3), map of the location of the plantation and others to identify various social components related to the plantations in it and guide questions and the results of interviews with

respondents.The study was conducted mainly to look at various social issues the potential to appear now and in the future.

Primary Data Collection

a) Field Observation, are very important to observe the real conditions in the field in order to:
- ✓ see factual conditions and situations in the field, related to the object of study or the issue under study;
- ✓ verify the appropriateness of the interview data with the actual situation and visually ensure the extent to which the predicted impact can or cannot be overcome; and
- ✓ digging deeper information through direct observation in the field about various matters relating to socioeconomic conditions in and around PT. UAI

b) Indepth Interview

In-depth interviews were conducted to explore people's opinions and views regarding the social impacts that are expected to emerge now and in the future. Interviews were conducted with key person interviews to find out more deeply an issue in accordance with the area of expertise or authority of each key respondent in each village. For this reason, the selection of key personal respondents was carried out by purposive sampling. The number of respondents in each village varied according to needs and conditions. In addition, interviews were also conducted with other relevant sources who were considered to understand the key issues or social issues, based on a review of documents conducted previously

c) Focus Group Discussion (FGD)

FGD activities were carried out in villages surrounding the PT. UAI The implementation of the FGD has the objectives:
- ✓ as a forum for problem solving if in the study of documents, observations and interviews found important things to formulate solutions, as well as to obtain more in-depth input to formulate current social impact studies, when the company operates and going forward;
- ✓ sharpening various issues, problems and needs related to social, economic and environmental impacts on the communities surrounding the company; and
- ✓ know perceptions and get input from stakeholders about various issues in the management of oil palm plantations, conflict resolution and social management plans as well as community needs and expectations of the existence of PT. UAI

b.3. Focus of the Social Impact Assessment

The assessment of social impacts, both positive and negative, in the company's internal and external environment, includes the components that form the basis of the sustainability of social livelihoods consisting of 5 components: ***Natural Capital, Human Capital, Financial Capital, Social Capital, Physical Capital***

b.4. Data analysis

Secondary data and primary data collected were analyzed by a combination of quantitative and qualitative methods. Quantitative analysis places more emphasis on calculations and figures such as demographics (population, population density, population growth, etc.). The qualitative analysis emphasizes the description or depiction of various facts and relationships between variables found in the process in the field. Based on the description and relationship between variables in the field, an analysis of: (1) socio-economic conditions of the community around the company area, (2) analysis of community perceptions of the company, (3) analysis of the impact of the company's presence on the environment, socio-economic and cultural community and (4) analysis of worker perceptions (Freelance / KHL Daily Employees, Permanent Daily Employees / KHT and Monthly / PB Workers) on the company. The results of the various analyzes were synthesized in the form of PT. UAI

2.2. HCV Assessment

a. Assessor Credentials

HCV Assessment was conducted by : PT Sonokeling Akreditas Nusantara

Address: Sariinten Complex No. 44, KP Selagalih RT 02/08 Ciomas Rahayu, Ciomas, Bogor, West Jawa- Indonesia

Telpon/Fax : 0251-8328530

Email : ksantosa_68@yahoo.com

Table 1. Composition Team HCV Assessment

Name	Role	Expertise	ALS Licence
Ir. Kresno Dwi Santosa, MSi ksantosa_68@yahoo.com	Team Leader/ Socio-economicculture expert	Socio-economic of community forestry	Provisionally (ALS15009KS)
Ir. Siswoyo, MSi Siswoyo65@yahoo.com	Team member/ Biodiversity Expert	Tropical forest conservation	Provisionally (ALS151010SS)
Dr. Ir. Rachmad Hermawan MSc.F racher67@gmail.com	Team member/Environment Service Expert	Hidrologist	N/A
Kasuma Wijaya, S.Hut, M.Si kasuma_wijaya@yahoo.com	Team member/Environment Service Expert	GIS, spatial planning expert	N/A
Sigit Pamungkas, M.Si.	Team member/Social Expert	Social	N/A
Rahman Fero Balfas, A.Md vero_balfas@yahoo.com	Team member/ Biodiversity Expert	Flora expert	N/A
Farhan Nahdiya, S.Hut. ci_paan@gmail.com	Team member/ Biodiversity Expert	Wildlife expert	N/A
Hendi Kusnadi kusnadi.bgr@gmail.com	Team member /mapping Expert	GIS & Remote Sensing	N/A

b. Methods

1) HCV assessment Time Frame

The assessment in the permit area PT UAI was done during 11 (eleven) months from December 2015 till October 2016, as presented in the **Table 2**. The field survey was carried out for 7 days, from the 13th to the 19th of January 2016, with the timeframe as presented in **Table 2**.

Table 2. Time frame of HCV assessment in the permit area PT UAI about 6,723.55 Ha

No.	Activities	Date
A.	**Pre-Assessment Phase**	
1	Information exchange	4 – 7 December 2015
2	Ranking identification	8 – 12 December 2015
3	Information collection	12 – 16 December 2015
4	Preparation of analysis and initial mapping	17 - 20 December 2015
5	Examination Study*)	21 – 25 December 2015
6	Preparation and planning	26 December 2015 – 10 January 2016

No.	Activities	Date
B.	**Assessment Phase**	
1	Field data collection	
a.	Opening Meeting	14 January 2016
b.	Data Collection :	
	• Flora	14 – 18 January 2016
	• Fauna (Mammals, Birds and Herpetofauna)	14 – 18 January 2016
	• Environmental Services	14 – 18 January 2016
	• Social-economic-cultural data, participatory mapping	14 – 18 January 2016
	• Mapping and landscaping validation	14 – 18 January 2016
c.	Data management, analysis and mapping	14 – 18 Januari 2016
d.	Closing Meeting	18 January 2016
2	Reporting	February - March 2016
3	Public consultation	18 January 2016
4	Peer Review	24 May 2016
5	Final reporting	October 2016
6	Submission Quality Panel Review HCVRN	February 2018

Note: *The examination study was not carried out through field visits; but done by communicating with the company via telephone and email. Field visits were not conducted because the Head of the HCV Assessment Team, namely Ir. Kresno Dwi Santoso, M.Si conducted due diligence on December 12-16, 2015 which was used as a technical consideration for top management's policy in preparing the feasibility of oil palm development in the PT. UAI Then the Chairman of the HCV Assessment Team of PT. UAI conducted an in-depth discussion with the sustainability team on the area to be assessed in Jakarta on December 21-25, 2015.*

2) Secondary data collection

Type of Secondary Data

Tabel 3. Secondary Data dan Information Collected during the Assessment

HCV	Main Data Resources and Information	Year
HCV 1	Map of Working Area PT. United Agro Indonesia (Decree of Bupati Kapuas Number 356/ADMINSDA Year 2012, 14 August 2012 about Granted Permit Area Location to PT United Agro Indonesia for Oil Palm Development in the Dadahup sub district. Kapuas Regency, Central Kalimantan about 4.000 Ha with 20% area for plasm plantation and Letter Bupati Kapuas No : 525.26/1862/Admin.SDA, 2014 29 August 2014 about Direction of Palm Oil Plantation Location PT. UAI in the Dadahup sub-district, Kapuas Regency, Central Kalimantan with area about 2.723,55 Ha)	2012-2014
	Map of Forested Area and Waters of Central Kalimantan Province Scale 1 : 250.000 (SK. 529/Menhut-II/2012, 25 September 2012).	2012
	Map of Regional Spatial Pattern Plan Central Kalimantan Province	2014-2034
	Government Regulation No. 7 Year 1999	1999
	IUCN Red List of Threatened Species (www.iucnredlist.org)	2016
	CITES (Appendix 1 dan 2) https://www.cites.org	2016
	Land covers : Landsat 8 Oli Band 654 Path/Row 118/62 ETM Satelite images	2015
	Plant - Tantra, *et al.*	1990
	Mammall : Payne, *et al.*	2000
	Bird : MacKinnon *et al.*	1992, 2010
	Herpetofauna : Sardi *et al.*	2013
	Map of Orang Utan distribution, Forum Orang Utan Indonesia (*http://www.forina.or.id*)	2014
	Map of Orang Utan distribution, IUCN (*Sange et al. 2016*)	2016
	Map of IBA distribution (Important Bird Area), Birdlife Internasional	2004

HCV	Main Data Resources and Information	Year
	Map of EBA distribution (Endemic Bird Area), Birdlife Internasional	2004
	Report of Environmental Impacts Assessment PT. UAI	2014
	Report of Environmental Impacts Assessment PT. UAI (addendum)	2015
HCV 2	Map of Working Area PT. United Agro Indonesia (Decree of Bupati Kapuas Number 356/ADMINSDA Year 2012, 14 August 2012 about Granted Permit Area Location to PT United Agro Indonesia for Oil Palm Development in the Dadahup sub district. Kapuas Regency, Central Kalimantan about 4.000 Ha with 20% area for plasm plantation and Letter Bupati Kapuas No : 525.26/1862/Admin.SDA, 2014 29 August 2014 about Direction of Palm Oil Plantation Location PT. UAI in the Dadahup sub-district, Kapuas Regency, Central Kalimantan with area about 2.723,55 Ha)	2012-2014
	Map of Forested Area and Waters of Central Kalimantan Province Scale 1 : 250.000 (SK. 529/Menhut-II/2012, 25 September 2012).	2012
	Map of Regional Spatial Pattern Plan Central Kalimantan Province	2014-2034
	CITES (Appendix 1 dan 2) https://www.cites.org	2016
	Land covers : Landsat 8 Oli Band 654 Path/Row 118/62 ETM Satelite images	2015
	Ecosystem : RePProt	1987
	Map of Ecoregional Kalimantan Island (Ministry of Environmental, 2013)	2013
	Map of Orang Utan distribution, Forum Orang Utan Indonesia (*http://www.forina.or.id*)	2014
	Map of Orang Utan distribution, IUCN (*Sange et al. 2016*)	2016
	Map of IBA distribution (Important Bird Area), Birdlife Internasional	2004
	Map of EBA distribution (Endemic Bird Area), Birdlife Internasional	2004
	Report of Environmental Impacts Assessment PT. UAI	2014
	Report of Environmental Impacts Assessment PT. UAI (addendum)	2015
HCV 3	Map of Working Area PT. United Agro Indonesia (Decree of Bupati Kapuas Number 356/ADMINSDA Year 2012, 14 August 2012 about Granted Permit Area Location to PT United Agro Indonesia for Oil Palm Development in the Dadahup sub district. Kapuas Regency, Central Kalimantan about 4.000 Ha with 20% area for plasm plantation and Letter Bupati Kapuas No : 525.26/1862/Admin.SDA, 2014 29 August 2014 about Direction of Palm Oil Plantation Location PT. UAI in the Dadahup sub-district, Kapuas Regency, Central Kalimantan with area about 2.723,55 Ha)	2012-2014
	Ecosystem : RePProt	1987
	Land Covers : Landsat 8 Oli Band 654 Path/Row 118/62 ETM Satelite images	2015
	Land Sytem-RePProT	1987
	Map of Biophisiography Kalimantan	1997
	Map of Ecoregional Kalimantan Island (Ministry of Environmental, 2013)	2013
	Report of Environmental Impacts Assessment PT. UAI	2014
	Report of Environmental Impacts Assessment PT. UAI (addendum)	2015
NKT 4	Map of Working Area PT. United Agro Indonesia (Decree of Bupati Kapuas Number 356/ADMINSDA Year 2012, 14 August 2012 about Granted Permit Area Location to PT United Agro Indonesia for Oil Palm Development in the Dadahup sub district. Kapuas Regency, Central Kalimantan about 4.000 Ha with 20% area for plasm plantation and Letter Bupati Kapuas No : 525.26/1862/Admin.SDA, 2014 29 August 2014 about Direction of Palm Oil Plantation Location PT. UAI in the Dadahup sub-district, Kapuas Regency, Central Kalimantan with area about 2.723,55 Ha)	2012-2014
	Land System : RePProt	1987
	Map of Watershed Cetral Kalimantan Province	-
	Land Coverd : Landsat 8 Oli Band 654 Path/Row 118/62 ETM Satelite images	2015
	Map of River network : DEM SRTM 90 m USGS NASA	2015
	Slope : DEM SRTM 90 m USGS NASA	2015
	Topography : Peta Topografi Indonesia, Badan Informasi Geospatial	1998
	Meteorology Station Tjilik Riwut Palangkaraya Airport Tahun 2006 - 2015	2006-2015
	Report of Environmental Impacts Assessment PT. UAI	2014

HCV	Main Data Resources and Information	Year
	Report of Environmental Impacts Assessment PT. UAI (addendum)	2015
HCV 5	Map of Working Area PT. United Agro Indonesia (Decree of Bupati Kapuas Number 356/ADMINSDA Year 2012, 14 August 2012 about Granted Permit Area Location to PT United Agro Indonesia for Oil Palm Development in the Dadahup sub district. Kapuas Regency, Central Kalimantan about 4.000 Ha with 20% area for plasm plantation and Letter Bupati Kapuas No : 525.26/1862/Admin.SDA, 2014 29 August 2014 about Direction of Palm Oil Plantation Location PT. UAI in the Dadahup sub-district, Kapuas Regency, Central Kalimantan with area about 2.723,55 Ha)	2012-2014
	Kapuas Regency in Figures 2015, BPS Kapuas Regency	2015
	Dadahup Sub District in Figures 2015, BPS Kapuas Regency	2015
	Map of Distribution of Kalimantan Island Ethnicity (http://www.ethnologue.com/)	2016
	Report of *Social Impact Assessment* PT. United Agro Industri (Sonokeling, 2016)	2016
	Report of Environmental Impacts Assessment PT. UAI	2014
	Report of Environmental Impacts Assessment PT. UAI (addendum)	2015
HCV 6	Map of Working Area PT. United Agro Indonesia (Decree of Bupati Kapuas Number 356/ADMINSDA Year 2012, 14 August 2012 about Granted Permit Area Location to PT United Agro Indonesia for Oil Palm Development in the Dadahup sub district. Kapuas Regency, Central Kalimantan about 4.000 Ha with 20% area for plasm plantation and Letter Bupati Kapuas No : 525.26/1862/Admin.SDA, 2014 29 August 2014 about Direction of Palm Oil Plantation Location PT. UAI in the Dadahup sub-district, Kapuas Regency, Central Kalimantan with area about 2.723,55 Ha)	2012-2014
	Kapuas Regency in Figures 2015, BPS Kapuas Regency	2015
	Dadahup Sub District in Figures 2015, BPS Kapuas Regency	2015
	Report of *Social Impact Assessment* PT. United Agro Industri (Sonokeling, 2016)	2016
	Report of Environmental Impacts Assessment PT. UAI	2014
	Report of Environmental Impacts Assessment PT. UAI (addendum)	2015

Data and information were collected from various literature obtained from IPB Library, PT UAI Company and various websites on the internet.

Secondary Data Analysis and Initial Mapping

The next step taken after the initial data and information (secondary) are collected is to conduct an initial analysis of the data and information, which is then plotted in a map which will later be used as an activity planning map. Initial mapping activities were carried out for the physical aspects, biodiversityaspects, environmental services aspects, and social, economic and cultural aspects of the area.

The main data used for the initial classification of land cover in the area of PT. UAI is Landsat 8 OLI Band 654 Path / Row 118/62 ETM image data obtained from the USGS website. The image data has a resolution of 30 meters and already has an earth coordinate reference. To get an adequate image and find out changes in land cover, using multi-time imagery. Furthermore, other secondary data used in the HCV assessment in the PT. UAI is vector data (shapefile format) obtained from PT. UAI. Determination of the study area boundary as part of the pre-processing stage of image analysis includes the boundary of the PT. UAI and the surrounding landscape to ensure consideration of forest land cover in the landscape. Furthermore, after pre-processing is the interpretation of satellite imagery to obtain an initial classification of land cover. Land cover classification in the early stages of image interpretation activities using a classification from The Southeast Asia 2005 Land Cover data set (Gunarso et al. 2013) published by RSPO.

Secondary Data Analysis

Species data's

Species data are necessary for assessing HCV 1 and HCV 2, and potentially existing species in the area were extracted from various sources (Vegetation - Tantra, *et al.* 1990; Mammals - Payne, *et al.* 2000; Birds - MacKinnon *et al. 1992* and 2010; and Herpetofauna – Sardi *et al.* 2013), and listed in a table form. Species were checked for their respective conservation status based on Government Regulation No. 7/1999, IUCN Red List on endangered species (www.iucnredlist.org), and the appendices 1 and 2 of CITES. These potential species were then verified in the field and to the local communities in the vicinity of PT UAI concession areas.

Land cover

Land cover is required in the HCV assessments 1 - 4. The main data used for the classification of land cover in the permit area of PT. UAI is the history of land cover and current land cover in 2015. The satellite imagery data used is Landsat 8 OLI Band 654 Path / Row 118/62 ETM imagery obtained from the USGS website. The latest satellite imagery in 2015 was further analyzed and verified with satellite imagery in previous years, then land cover classification was carried out by digitizing on the screen at a scale of 1: 50,000. Classification of land cover at the stage of image interpretation activities uses a classification from The Southeast Asia 2005 Land Cover data set (Gunarso et al.2013) that has been published by the RSPO.

Ecosystems

In assessing HCV 3, the mapping of ecosystem in a bio-physiographic unit, where the concession area of PT UAI is located, was using a proxy of RePPProT classification in Central Kalimantan. Map of the ecosystem in the bio-physiographic units was then be overlaid with land cover maps of 2016, and subsequent analysis was done to determine whether this ecosystem is categorized as rare or endangered.

Environmental services

In the HCV 4 assessment, the mapping of river networks in the presence of springs is done by overlaying the PT. UAI with Map of Watershed Zones of Central Kalimantan Province and SRTM Digital Elevation Model (DEM) 90 from USGS-NASA (2014). The river network map that has been compiled is then used as verification material to the community around the PT. UAI and field observations to confirm their presence and name. Determination of topography and slopes in the

permit area of PT. UAI is done by overlaying the map of the permit area of PT. UAI with SRTM Digital Elevation Model (DEM) from USGS-NASA (2014). Determination of land in the permit area of PT. UAI is done by overlaying the map of the permit area of PT. UAI with Landsystem Map from RePPProT (1997). Furthermore, the slope and soil class data are added with rainfall and soil data used as material for calculating and creating Erosion Hazard Level (TBE) maps.

Map of river / spring network, and Erosion Hazard Level in the area of the PT. SMA's overlaid with a map of land cover, used as a reference to field checking, as well as to see if there is any area that can function as a natural fire barrier or not.

Social culture data

In the HCV 5 and 6 assessments, the determination of village distribution is done by overlaying the PT. UAI with topographic maps of Indonesia (Geospatial Information Agency); whereas for tribal distribution, it is done by overlaying maps of the permit area of PT. UAI with Tribal Distribution Map on Kalimantan Island. Other secondary data used in HCV 5 and HCV 6

assessments were sourced from the profiles of each HCV study village, the Medium Term Village Development Plan (RPJMDes), sourced from Kapuas Regency in Figures 2015, Dadahup Sub-District in Figures 2015, and Social Impact Assessment Reports of PT. UAI (Sonokeling, 2016).

The other activities undertaken in preparation for the initial mapping and analysis were: (1) identifying potential and an indication of the presence of HCV attributes or elements; (2) understanding the landscape context; and (3) identifying conservation issues and potential threats to HCVs.

Examination Study

Prior to the HCV assessment, PT. Genting Plantation Nusantara together with the Team Leader of the HCV Assessment Team conducted an examination study to conduct due diligence which was used as a technical consideration for top management policies in preparing the feasibility of oil palm development in the PT. UAI. The activity was carried out on December 12-16, 2015 in the area of PT. UAI. Data collected by meeting with community leaders and analyzing maps and short visits to the field. The results of the due diligence activity are the material of the team's initial study in the preparation phase for conducting an HCV assessment study.

The HCV assessment examination study in in the area of PT. UAI's conducted at the Head Office of PT. UAI in Jakarta through in-depth discussions about the area to be assessed with the sustainability team, on December 21-25, 2015. Based on discussion outcome with the sustainability team, the results of due diligance and information on the condition of the area to be assessed are used as material to verify some information collected during a desktop study, identifies the main issues that must be covered during the assessment phase and determines the expertise required in the HCV assessment.

Preparation and Assessment Planning

Matters prepared in preparation and planning activities include: (1) Determination of work methods and sampling intensity that will be used in data collection in the field (flora, fauna, environmental services and social); (2) The design of the field survey; (3) HCV evaluation implementation team and (4) HCV assessment activity timeline.

Assessment Phase

In the HCV assessment phase, activities undertaken include: field data collection, reporting, public consultation, peer review and PT UAI's HCV report submission to the HCVRN Quality Panel Review.

3) **Primary Data Collection**

Mapping and landscape validation

Field and landscape verification was done to assess the accuracy of boundary of the permit area of PT UAI, location of village or settlement, topographic conditions, land cover, river network, embankment, water catchment area, and ecosystem condition. Field checks were done in the boundary areas, rivers, and hilly areas, also to clarify land cover conditions.

Opening Meeting

In the opening meeting, the activities carried out included: a presentation on the HCV assessment process and plans for field data collection to be carried out. In the opening meeting activities as well as conducting verification and discussing the planned data collection activities and other activities that will be carried out. Based on input from the next opening

meeting activity, it is used as a material to improve the plans that have been prepared by the previous HCV Assessment Team.

Flora/plants

The determination of sample units is done by overlapping maps of land classes, topography, soil types, river distribution and land cover. Based on the results of the determination of flora sample units in the permit area of PT. UAI obtained as many as 15 observation sites, including: river border (9 locations), canals (3 locations), inundated swamps (2 locations) and flora and fauna protection areas (1 location). Flora data collection in all locations is intended to meet the needs of flora data both needed in HCV assessments and as material to provide recommendations on what types of flora can be selected for rehabilitation activities in the future HCV area. The collection of flora data in each sample unit was carried out using the encounter method, namely by recording the types of flora found along the observation path, where at each observation point was 200-500 meters long. Before the sample path is established, a quick field observation (recognition method) and interviews with the local community / UP staff are carried out in order to improve the accuracy of the data. Flora data taken is data on the existence of flora species in the sample units and the quality of their habitat. Flora data collected in the field included all plant habitus, namely the names of tree species, herbs, shrubs, lianas, epiphytes, spikes, bamboo, palms and pandanus. To identify plant species, refer to some of the literature, among others: as presented in the Bibliography, while the types of flora whose scientific names are not yet known are taken herbarium samples for the subsequent identification process. Then the status of flora can be obtained from the IUCN and CITES Websites and from the Indonesian government policy documents (Government Regulation Number 7 of 1999).

Fauna/wildlife

Determination of fauna / wildlife sampling units is done by overlapping maps of land classes, topography, soil types, river distribution, land cover and wildlife distribution (both sourced from various literature and information from companies and communities). Based on the results of the determination of fauna / wildlife sample units in the permit area of PT. UAI obtained as many as 15 observation locations, including: river border (9 locations), canals (3 locations), inundated swamps (2 locations) and flora and fauna protection areas (1 location). Fauna data collection uses the line method with a width of 20 meters and a length of 200-500 meters. The length of the line is adjusted to the condition of land cover in the field, laying the line sample used of the purposive sampling method. Fauna data taken is data on the existence of fauna species in the sample units and their habitat quality. To enrich the census results, interviews were conducted with local communities / UP staff to improve data accuracy. Data collected in the morning and evening. In collecting fauna data, survey equipment such as the Global Positioning System (GPS), tally sheets and literature of Kalimantan fauna types are used.

(1) Mammals

Mammalian data collection in each sample unit was carried out using rapid assessment techniques, by combining 3 methods, namely (1) Interviews with the community, especially hunters and company staff; (2) encounters both directly (visually) and indirectly (traces, sounds, scratches and dirt) and (3) Observation of the quality of mammal habitat is carried out in collaboration with the flora team. Interviews with the community to ask the types of mammals found and the quality of their habitat were carried out in 5 villages. Observations by encounter technique were carried out at each observation location, where at each observation point was 200-500 meters long. In general, mammal observations are made from 07.30-17: 00, but nighttime observations are also made in the permit area when traveling home from the field to the inn because sometimes at night too. Besides that around the inn in the morning

and evening also conducted observations of mammals. Incidentally the location of the inn is not far from the permit area of PT. UAI.

(2) Birds (Aves)

Bird data collection in each sample unit was carried out using rapid assessment techniques, by combining 3 methods, namely (1) Interviews with the community, especially hunters and company staff; (2) encounters both directly (visual) and indirectly (sound, falling body parts, and feses), and (3) Observation of the quality of bird habitat is carried out in collaboration with the flora team. Interviews with the community to ask about the species of birds found and the quality of their habitat in 5 villages. Observations by encounter technique were carried out at each observation location, where at each observation point was 200-500 meters in the sampling unit area. In general, bird watching is carried out from 07.30-17: 00, but on the way home from the field to the inn if birds are found in the permit area are also recorded. because sometimes at night too. Besides that around the inn in the morning also carried out bird watching.

(3) Herpetofauna (reptilia and amphibia)

Herpetofauna data collection in each sample unit was carried out using rapid assessment techniques, by combining 3 methods, namely (1) Interviews with the community, especially hunters and company staff; (2) Visits both directly (visually) and indirectly (voice) and (3) Observation of herpetofauna habitat quality is carried out in collaboration with the flora team. Interviews with the community to ask about the types of herpetofauna found and the quality of their habitat in 5 villages. Observations of reptiles are carried out at each observation location which is carried out together with observations of birds and mammals; while amphibian observations focused on river areas. In general, reptile observations are carried out from 07.30-17.00, while amphibian observations are carried out at night when traveling home from the field to the inn because sometimes at night too. Besides that around the inn at night also carried out observations of amphibians.

Wildlife data collected included taxa of mammals, birds and herpetofauna (reptiles and amphibians). To identify the types of wildlife found, refer to the Mammals Identification Handbook (Mammals Field Guide in Kalimantan, Sabah, Sarawak and Brunei Darussalam), Birds (Bird Field Guide Series in Sumatra, Java, Bali and Kalimantan), Reptiles and Amphibians (Herpetofauna Diversity at Lekawai Resort Bukit Baka Bukit Raya National Park) and Indonesian Bird Register Book No. 2. Then the fauna status can be obtained from the IUCN and CITES Websites and from the Indonesian government policy documents (Government Regulation Number 7 of 1999).

<u>Environmental services</u>

Data collection on environmental services in the area of PT. UAI was carried out in 15 sample units, river border / canal (13 locations) and fresh water swamp (2 locations). Data and information taken for verification of physical aspects are the presence and condition of river networks, road networks, boundaries, types and types of land, topography of the area and overview of the area as a whole. With regard to environmental services, data and information that need to be verified are:

- ✓ The condition of land cover in the area of HCV 4 and its vicinity.
- ✓ Water quality, color, smell, taste, and turbidity.
- ✓ Streamflow; observed elements were sectional areas of the river (width and depth of river) and velocity.
- ✓ Utilization of river, springs, and swampy areas.
- ✓ Data and information on the occurrences of flood and inundation.

- ✓ Checking the areas with potential landslides, and those with potential erosion of High and Very High: land cover, slope, solum. aspect,
- ✓ Checking the areas with slope above 40%, their land cover conditions, and solumn.
- ✓ Checking the ecosystem with capacity to control local hidrological function as well as wild fire breaks: riparian, swamps.
- ✓ Data and information on local communities' routine in land preparation (land burning or not).

Social and culture

HCV 5 assessment is carried out through 3 (three) stages of activities, namely:

1) Field interviews and observations using purposive sampling method in determining the target respondents who have been processed from the stakeholder mapping process. In stakeholder mapping, who are the parties involved and relevant to the study, as well as the representation of existing institutions. Thus the representation of figures or informants in HCV studies is sufficient to represent villagers, because HCV study villagers are homogeneous (answers have uniformity related to HCV 5).

2) Through a participatory mapping process. Participatory mapping was carried out by showing a sketch of a map of PT UAI's concession area, then several residents (community leaders) were asked to indicate where the location or area within the concession by residents was still used as a place for meeting basic needs and meeting the needs of activities culture. With this participatory mapping method, information is obtained directly from the community by mapping together areas that have potential or are estimated to be indicated as HCV 5. Participatory mapping is also carried out by jointly describing citizens as follows:

   a) Preparation of participatory mapping activity plans.
   b) Preparing materials for dissemination (NKT and FPIC) to be delivered to the public.
   c) Formation of a village-level participatory mapping team that involves community leaders, by asking one of the community leaders to sketch a village map based on a map of the palm oil plantation concession area. This village sketch map contains:
      - ✓ Village spatial structure with information on the existence of agricultural areas, plantations, roads, forests, etc.
      - ✓ Administrative indicative boundaries between villages or villages from one village to another.
      - ✓ Village profile data relating to village facilities and infrastructure such as jelan village infrastructure, bridges, educational facilities, health facilities, etc.
   d) Determine the location of land use or use by the community which includes:
      - ✓ Control of important lands that you want to protect or make a living.
      - ✓ Location of affected villages and areas of use of their resources (with official or customary rights) - check land tenure studies. If there is information on land use that is not known with certainty, it will consult with local community leaders.
      - ✓ Location and boundaries of official and customary land, areas bound to official, customary and unofficial land rights, and use rights - check land tenure studies.
      - ✓ Utilization of natural / forest resources that are important for the use of natural resources including forest resources around settlements,
      - ✓ Other important areas which would be affected by the planned plasma plantation development.

e) Then the sketch-based mapping data processing is then processed and then overlaid with a GIS map as a participatory draft map whose results are presented back to the community for comment and correction.
f) Finalize participatory maps with GIS-based mapping collaboration. The final map is the result of collaboration between the assessment team and community representatives.

3) Data and information regarding areas that have HCV 5 elements are then spatially mapped and delineation of the protected area is determined. If there is doubt, the precautionary principle is used by assuming that the community has no alternative source of meeting needs. In certain cases, the assessment team consults with ecologists to determine this interaction.

4) Public consultation, aims to inform HCV 5 assessment results to the public / village community and to obtain suggestions, corrections as well as input from villagers related to areas designated as HCV 5 areas.

The method for identifying HCV 6 areas is carried out as in the HCV 5 identification method. Information on areas that have important functions or values for traditional cultural identities / local communities is obtained from secondary data and from government and UP reports. Based on the preliminary information, an area of HCV 6 indicated at the landscape, ecosystem or its components that is important for a unique cultural identity is identified. Sources of data in HCV 6 assessments were obtained from local community subjects namely; local community leaders and the community itself, as well as information from research results, historical documents and other available documents. In-depth information gathering for the identification of HCV 6 areas was also carried out through FGD, with a total of 6 respondents.

Indicators used to show the distribution of ulayat areas or the distribution of forest resources related to the collective and individual behavior of local communities to meet their cultural needs, including zoning made based on certain cultural rules, the distribution of archeological sites, the distribution of ritual activities for local communities, the distribution of resources biological nature for meeting cultural needs.

Interviews were conducted with respondents using structured interview guidelines and focused on information to be obtained in the surrounding villages namely Dadahup Village, Suber Alaska, Srimulya, Sumber Makmur F4, and Tambak Bajai, with a total number of respondents interviewed as many as 21 people. The sampling is based on the representation of community leaders who know the information and details of the concession area and at the same time as an informant in the HCV assessment. Based on the Indonesian HCV Toolkit (2008), the minimum number of respondents to be interviewed by each sub-group (ethnicity, religion, or livelihood) is at least 10%, but due to time constraints, the minimum number of respondents to be interviewed in each sub-group cannot be met and discussions with stakeholders cannot yet be held. Nevertheless, the respondents interviewed and involved in FGD activities have represented various interest groups as informants, including: village officials (village heads, hamlet heads, and affairs heads), adat leaders, BPD and community representatives. In addition, the number of respondents interviewed and involved in FGD activities already represented ethnicity, religion, gender (men and women: 1:10) and livelihoods, so that the taking of interest groups as informants in HCV 5 & 6 studies was considered sufficient to represent the study HCV. List of villages surveyed and methods for collecting socio-cultural data in the area of PT. The UAI is presented in Table 4.

Table 4. List of Villages Surveyed and Methods for Collecting Socio Cultural Data in the Permit Area of PT. UAI

No.	Villages	Methode of collecting data

		FGD	Interviews and field observation	GPS Coding
1	Dadahup	√	√	√
2	Sumber Alaska	√	√	√
3	Srimulya	√	√	√
4	Sumber Makmur F4	√	√	√
5	Tambak Bajai	√	√	√

Mapping and Landscape Validation

Mapping and landscape validation is carried out to assess the accuracy of the permit area boundaries, the location of villages / settlements, topographical conditions, land cover, river networks, catchments and ecosystems. Field checks are carried out in several permit area boundaries, land cover types, rivers and catchments. Location of biodiversity data collection (flora and fauna), environmental services, and social and culture in the field are presented in Figure 9.

4) **Data Processing and Analysis, and Mapping**

Processing and analysis, as well as mapping are the most important and crucial stages in the process of assessing areas that might have HCVs. During the analysis phase, a comprehensive and in-depth study and study of secondary information and primary data obtained from the field includes physical, spatial, flora, fauna, environmental services, and social and cultural aspects. The results of the analysis are then used to identify areas that have HCVs, which will then be mapped with the help of geographic information system software (GIS).

5) **Closing Meeting**

In the closing meeting, the activities carried out included: a presentation on the provisional results of the HCV assessment that had been carried out in the permit area of PT. UAI, includes: HCV results / findings, threats and recommendations for management and monitoring. The purpose of the closing meeting is to verify the data and information that has been obtained, as well as obtain input or suggestions on the HCV assessment results that have been carried out in the area of PT. UAI for further improvement or refinement of the report.

6) **Reporting**

The final step in the HCV assessment process is the preparation of an assessment report. The preparation of the report follows the format of the report in accordance with the guidelines "HCV Assessment Report Template" published by the HCV Resource Network Assessor Licensing Scheme (HCVRN-ALS), 3 September 2015.

7) **Public Consultation**

HCV assessment public consultation activities in the area of PT. UAI is carried out after the HCV assessment report in the area of PT. The UAI has been compiled. The public consultation event was held on Friday 18 January 2016 in the Meeting Room of the Dadahup District Office which was attended by several government agencies such as: the Kapuas District Plantation Office, the Kapuas District BLH Office, the Dadahup District Muspika (Camat, Polsek, Koramil), UP staff , Local Communities (village heads, BPD, village officials, traditional leaders and community leaders), with a total of 35 participants. Issues presented in public consultations include: HCV understanding and categories / sub-categories, objectives and benefits of HCV assessments, HCV assessment processes, HCV assessment methods, field observations (biodiversity, environmental services and social culture), findings / the results of

the temporary HCV assessment and its map (version 1), threats to the HCV and recommendations for management and monitoring of the HCV area.

8) **Peer Review**

Peer review is carried out when the assessment report is still in the form of a draft report, so that the final report of the activity is a comprehensive report, factual and in accordance with the rules of the multi-disciplines. In addition, peer review can also be carried out on a ready-made report. This is usually done to get other opinions from other experts from the same field at the stage of forming an identified HCV management plan. Review the High Conservation Value Assessment Report in the Permit Area of PT. UAI was conducted by Ir. Dwi Rahmat Muhtaman, MAP which is one of the reviewers included in the HCV-RN Peer Review list, with a peer review report date May 24, 2016.

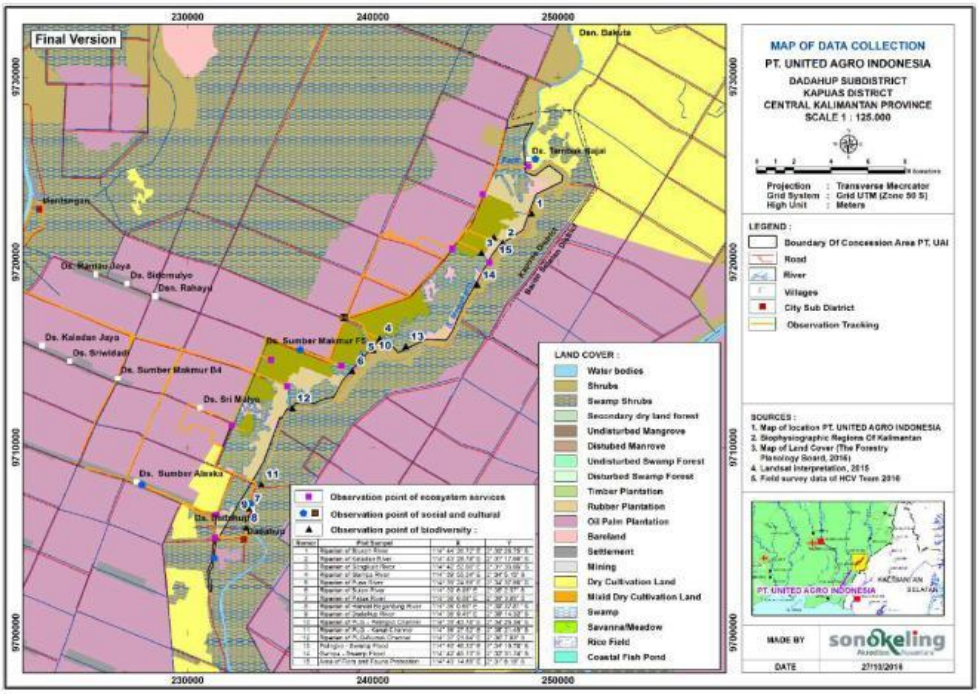


Figure 9. Map of Data Collection HCV Assessment in the Permit Area of UAI

2.3. Land Semidetails and Land Suitability Assessment

a. Assessor Credentials

Land Semidetails and Land Suitability Assessment was conducted by : PT Sonokeling Akreditas Nusantara, December 2016.

Address: Komplek Sari Inten No 44, Ciomas, Bogor, West Java – Indonesia 16610

Table 4. Composition Team

No.	Nama	Position
1.	Ir. Kresno Dwi Santosa, M.Si	Person in charge of activities
2.	Bukhari, SP, MSi	Team Leader/ Soil Expert and Land Resources
3.	Dandun Sutaryo, SSi	Field Coordinator/ Soil Expert
4.	Tatis Markis	Soil Surveyor
5.	Dedi, SP.	Soil Surveyor
6.	Lukman, SP.	Soil Surveyor
7.	Abdul Azis, SP	Soil Surveyor

b. Methods

The time frame for the implementation of the Semi Land Detail Survey and Land Suitability is carried out for 3 (three) months, namely October - December 2016.

b.1. Preparation

1) Collection and analysis of secondary data

Secondary data used in this survey activity, among others:

- Landsytem map
- Land map review
- Satellite imagery
- Topography or DEM Map

The secondary data analysis above aims to:

- Obstain a comprehensive description of the survey area through the collection of information from available and relevant data and maps, so that it can assist in the analysis of landforms and the smooth implementation of surveys in the field.
- Interpretation of landforms / land units from DEM data, remote sensing imagery and geological maps that will be used to prepare land units as a basis for planning field surveys and preparing land maps and land suitability analysis.

2) Survey Equipment Preparation

In the preparation stage, preparations are also made for the provision of survey equipment in the form of:

- Belgian type mineral drill (1.2 m long);
- The Munsell Soil Color Chart book;
- Revised edition of the National Soil Classification Book (BBSDLP, 2014) and the 2010 edition of Keys to Soil Taxonomy
- GPS (geographical positioning system) tool for determining the coordinates of observation positions
- Measuring soil pH in the field (lakmus);
- Clinometer
- Abney level to measure slope slope;
- Steel meter or band meter;

- Ground profile digging tools (hoes, shovels, crowbars, etc.).
- Laptop computers for data entry and spatial analysis, which is equipped with the ArcGIS program, Global Mapper.

b.2. Field Survey Phase

1) Pre survey stage

A pre-survey or preliminary survey also aims to consult with the employer and obtain an overview of the condition of the survey area. Field observations include checking several land units related to landform distribution, lithology / parent material, soil composition and characteristics as well as preparation of basecamp, local transportation and field workforce. Information obtained from the survey results is used for planning the implementation of the main survey.

2) Main Field Survey

Soil observation and soil fertility sampling.

Soil observation is carried out through a transect approach (topo-lithosene) in the representative land unit that has been planned prior to the field and a 500 x 1000 m grid system. Soil observation is carried out by paying attention to the appearance of changes in micro-surface relief on flat areas, while for sloping areas taking into account the slope, position and shape of the slope. If there is a representative land unit that is difficult to visit because of low accessibility, then extrapolation of data can be done based on the similarity of land unit characteristics. The observation density is 1/50 Ha, taking into account the area of the Block. Map of drill observation, soil profile, location of soil fertility samples

Land observation is carried out by: (a) Drilling of land, (b) Minipit hole digging, and (c) Complete soil profile. The drilling of land was carried out as deep as 120 cm, while the manufacture of minipit was 50 cm deep with a length and a width of 50 x 50 cm. Observation of land on the minipit is continued with drilling as deep as 120 cm Making complete soil profiles with sizes: length x width x inside: 100 x 100 x 150 cm or up to the parent material layer, if the soil depth is less than 150 cm

Ways of making profiles, observing the properties of soil morphology and physical environment in the field refer to the Land Observation Guidelines (Balittanah, 2004) or Guideline for soil profile description (FAO, 1990). The coordinates of the observation point are determined by GPS (UTM or geographical) and plotted on a map of land units on a scale of 1: 50,000. The representative soil profile is fully described and represents each land unit (group / subgroup of land). All data on the results of drilling, mining and soil profiles in the field are recorded in the database entry form.

Soil samples are taken from each horizon from the representative profile or minipit or drilling which represents the land unit of each land unit, then coded according to the ground observation code, to be further analyzed in the laboratory.

Field observation maps are prepared using land unit maps as a result of interpretation / analysis. All ground observation points in the field are plotted in each sheet of the land unit map. Data from field observations, namely soil morphology and physical environment.

Field maps are arranged based on observations of land units and land units from the results of observations of drilling, minipit and profiles. During the field observations, corrections to land units were carried out, both for delineation and naming (symbols) of land units in accordance with ground truth conditions.

Maps of land need to be completed with map legends. The legend of the field map is arranged in the following order: sequence number of land map units (SPT), land units at the level of land / subgroup of land and their properties, and proportions, landform units, parent material units and relief units / slopes and area of each SPT (in ha and%). The land units found in each SPT can be more than one type of land and the spread is expressed in proportions, namely: very dominant (P>

75%), dominant (D = 50-75%), moderate (F = 25-49%), little (M = 10-24%) and very little (T = <10%) (CSR / FAO, 1983). The proportion of land units is suspected from the distribution of land on the slope / facet position of the land unit at the time of soil observation in the field.

SPT (unit of land map) consists of elements of land units, landform units, parent material units and relief units / slopes. Land units consist of: Kinds of soil, depth of soil, drainage, texture, soil reaction (pH), cation exchange capacity (CEC) of soil and base saturation (KB).

b.3. Field and Laboratory data analysis

Laboratory analysis was carried out on soil samples. The soil samples analyzed included fertility samples. Based on the variation and distribution of the Land Map Unit (SPT) temporarily from the results of field observations a sample profile and examples of soil fertility are selected for each SPT. Examples of soil around 0.5-1.0 kg were taken from each horizon from drilling (wet soil), minipit and representative soil profiles to be analyzed in laboratories that had received accreditation. The type of analysis of soil samples consists of standard and special / additional chemical analysis and analysis of minerals (sand fraction and or clay fraction), which are tailored to the needs.

b.4. Land Units Analysis

Evaluation of land suitability is done by comparing the compatibility between the quality and properties of the land as a parameter with the criteria for land suitability classes based on the requirements for plant growth evaluated, namely the land suitability class is determined by the smallest value, that is the parameter as the heaviest limiter or the most difficult to overcome compared to other limiting factors.

Evaluation of land suitability for oil palm plants in the area was carried out by referring to the criteria of the Land and Agro-Climate Research and Development Center, Bogor Soil Research Center, Ministry of Agriculture and PPKS criteria (2005) for oil palm plants. This PPKS criterion assumes that the problem of soil fertility is not a problem that is taken into consideration because it can be improved by the provision of fertilizers and generally in oil palm cultivation fertilizer is always applied as an addition to nutrients for the plant. The potential for soil fertility is approached by criteria for soil acidity (soil pH) which can generally indicate the level of nutrient availability in the soil. The quality of land evaluated includes climate, physiography, soil, topography, land use and flood hazards.

Class quality of land suitability shows the level of suitability relative to certain uses. At the class level, land suitability assessment is differentiated according to its level, namely: land classified as very suitable (S1), quite suitable (S2) according to marginal (S3), not appropriate (N).

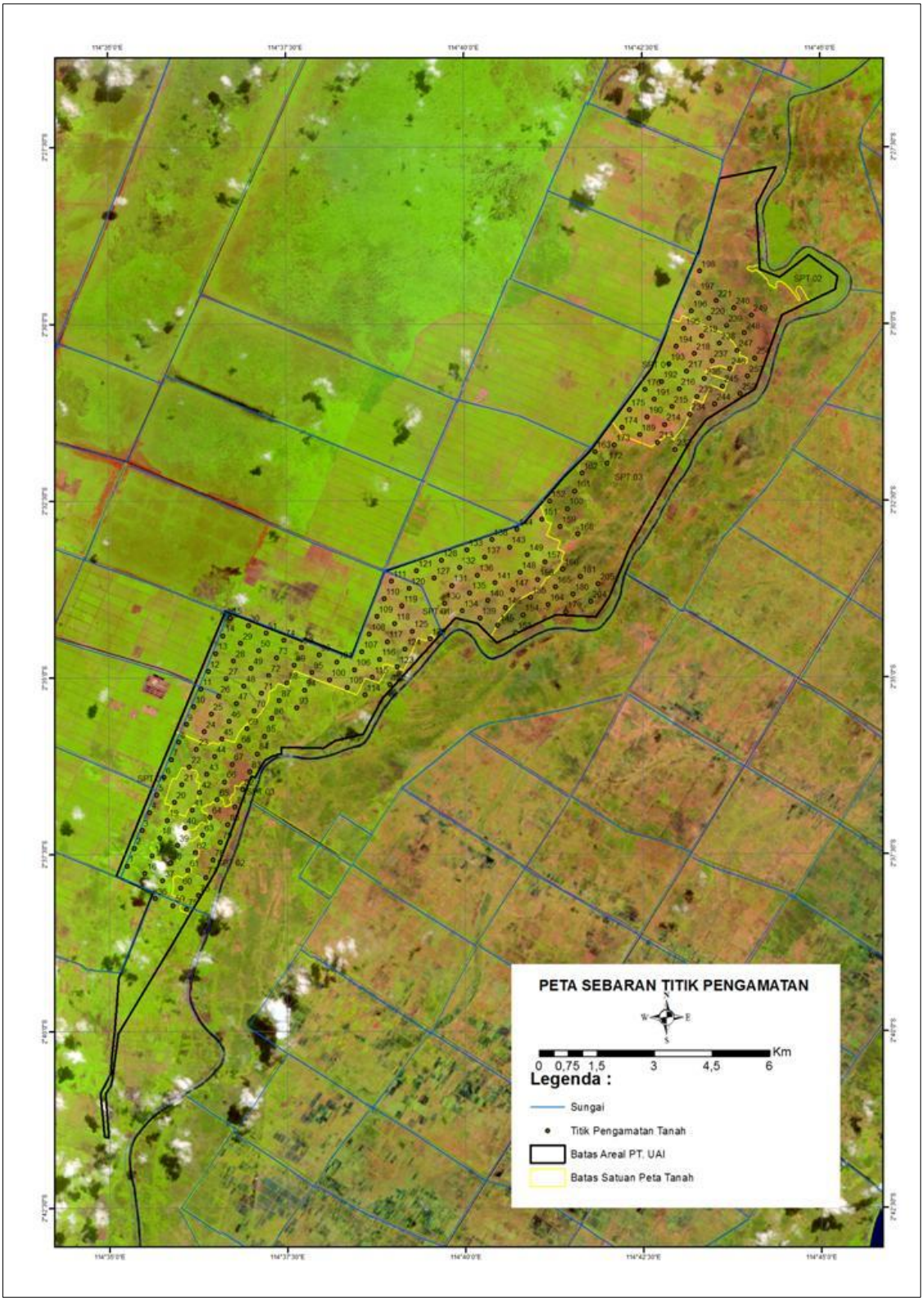


Figure 10. Map of Soil Observation Points in the PT. United Agro Indonesia

2.4. Carbon Stock Assessment and GHG Emissions

a. Assessor Credentials

Name	:	Kasuma Wijaya, S.Hut, M.Si
Address	:	Perum Griya Melati Blok C3/23, RT. 003, RW. 013, Kelurahan Bubulak, Kecamatan Kota Bogor Barat, Kota Bogor, Provinsi Jawa Barat. Indonesia
Position	:	Land covers image analysis and GIS experts
Register	:	Registered HCS Approach Practitioners

b. Methods

CSA and GHG Activities in PT. UAI is conducted in September 2019- February 2020. CSA and GHG activities in the Palm Oil Area of PT. United Agro Indonesia follows the RSPO GHG assessment procedure guidelines for new plantings. The RSPO GHG assessment procedure for new plantings has four key stages, namely (1) Carbon Stock Assessment, (2) GHG Emission Assessment for new plantings, (3) GHG Emission Management and Mitigation Plans and (4) GHG Assessment Reporting for New Plantings. The key steps in the RSPO GHG Assessment Procedure are presented in **Figure 11**.

The CSA methodology has a process stage which consists of two key steps. The first step is the preparation of a map of land cover from satellite imagery and the second step is estimating carbon stocks in the new development area. The carbon stock estimation using these two key steps can then be used to estimate RSPO GHG emissions resulting from changes in land use for new development areas

The estimated carbon stock required must include carbon stored in: (1) Above-ground biomass, (2) underground (root) biomass and (3) peat soil - if any. The total amount of carbon stock at the assessment site is the sum of carbon stocks in the above and below ground biomass estimates with peat soil carbon stock estimates. The key steps for carbon stock assessment are presented in **Figure 12.**

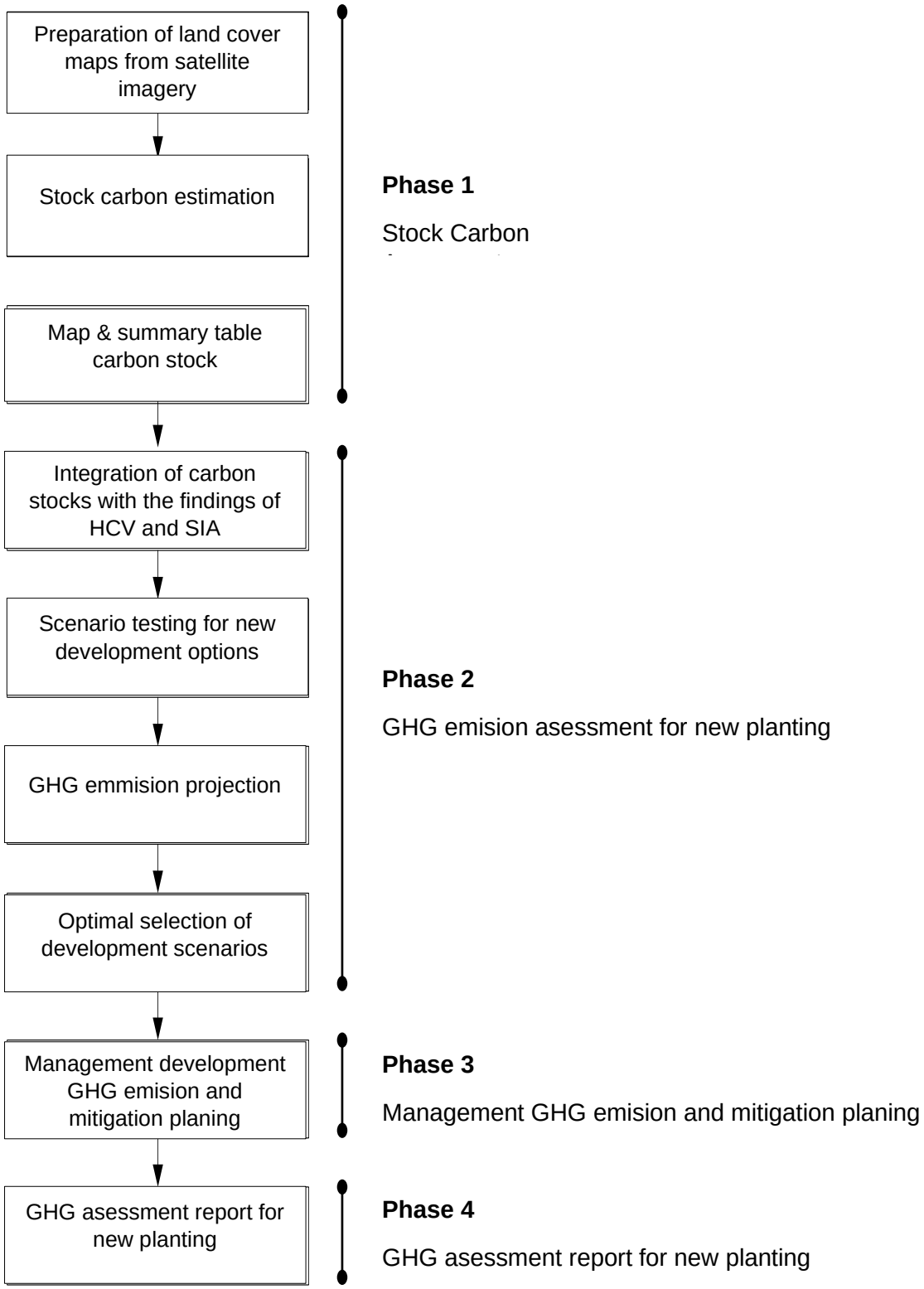


Figure 11. Stage of RSPO GHG Assessment Procedure for new planting

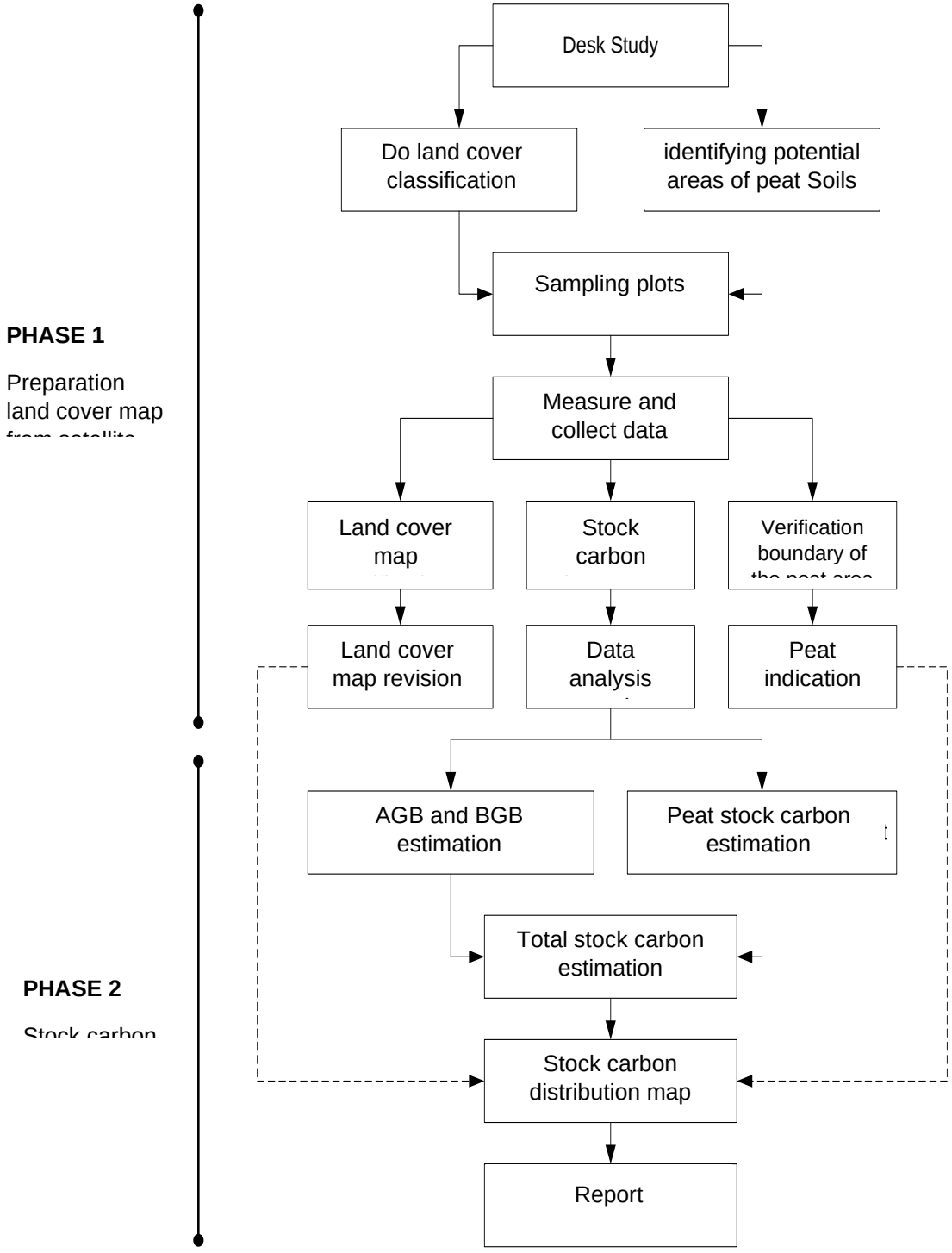


Figure 12. Key Step Diagram for Carbon Stock Assessment

Sampling Plots

The minimum number of plot needs is calculated by Winrock Calculator which uses a confidence level of 90% and a sampling error of 20%. This condition is possible because in SNI 7724: 2011 concerning Carbon Measurement in the Field states that the maximum permissible sampling error is 20%. Many natural factors in the field that cannot be controlled by humans such as topography, climate and weather, so the maximum sampling error of 20% is still allowed

In the Winrock Calculator, the calculation template uses a formula built by Walker et al. (2007) based on the CDM - Executive Board 2006 namely AR-AM0001, AR-AM0003, AR-AM 0004, AR-AM0005, AR-AM0006 & AR-AM0007. The formula is as follows:

$$n = \frac{\left[\sum_{i=1}^{m_{SP}} N_i \cdot st_i - \sqrt{C_i}\right] \cdot \left[\sum_{i=1}^{m_{SP}} N_i \cdot st_i \cdot \frac{1}{\sqrt{C_i}} \cdot\right]}{\left(N \cdot \frac{E}{z_{\alpha/2}}\right)^2 + \sum_{i=1}^{m_{SP}} N_i \cdot (st_i)^2}$$

$$n_i = \frac{\sum_{i=1}^{m_{SP}} N_i \cdot st_i - \sqrt{C_i}}{\left(N \cdot \frac{E}{z_{\alpha/2}}\right)^2 + \sum_{i=1}^{m_{SP}} N_i \cdot (st_i)^2} \cdot \frac{N_i \cdot st_i}{\sqrt{C_i}}$$

$$N = \frac{A}{AP}$$

Information:

A = *Total size of all strata, eg total project area; ha*
Ai = *Size of each stratum; ha*
AP = *Sample plot size; ha*
Sti = *Standard deviation for each stratum i; dimensionless*
Ci = *Cost of establishment of a sample plot for each stratum i; e.g. US$*
Q = *Approximate average value of estimate quantity Q (eg tree biomass; m3/ha)*
p = *desired level of precision (e.g. 10%); dimensionless*
N = *Maximum possible number of plots in the project area*
Ni = *Maximum possible number of plot in stratum i*
E = *Allowable error (20%)*
N = *Sample size – total number of sample plots required in the project area*
ni = *Sample size for stratum i*
Z = *Value of the statistic z (normal probability density function), for* *= 0.05 (implying a 95% confidence level)*

The number of measurement sample plots for carbon stock analysis in PT. UAI is 32 sample plots grouped into 16 Lane (2 plots per lane), i.e., on shrub land cover (4 lanes), swamp shrubs (5 lanes) and open land (7 lanes). Distribution of measurement plot paths in the palm oil plantation area of PT. UAI is presented in Figure 13.

The design of the sample plots used in the inventory of carbon stocks for above-ground biomass (Above Ground Giomass / AGB) are nesting and square shapes. A maximum of 5 sample plots are placed in each transect / lane. The sample plot design in the carbon stock inventory activity is presented in Figure 14.

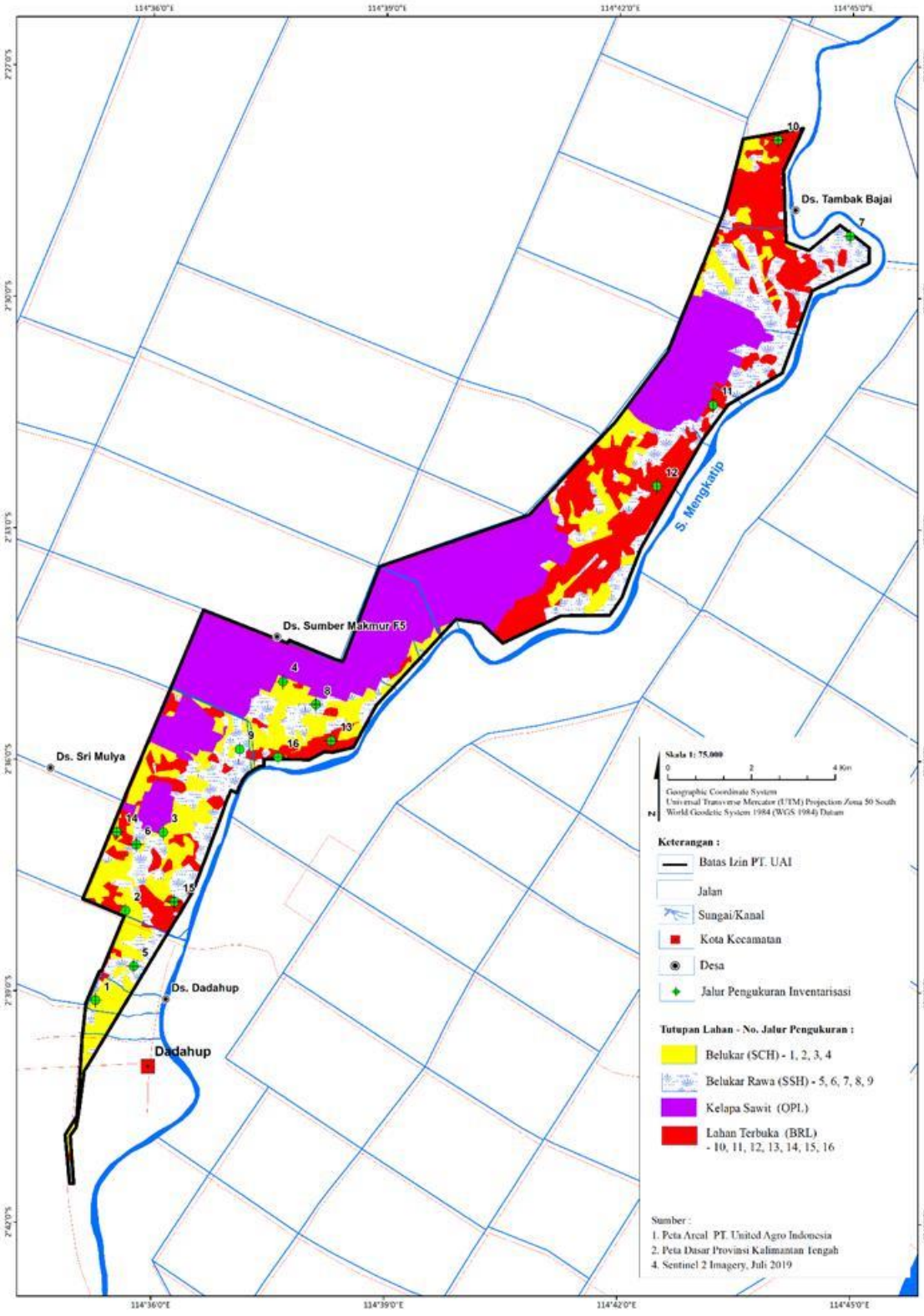
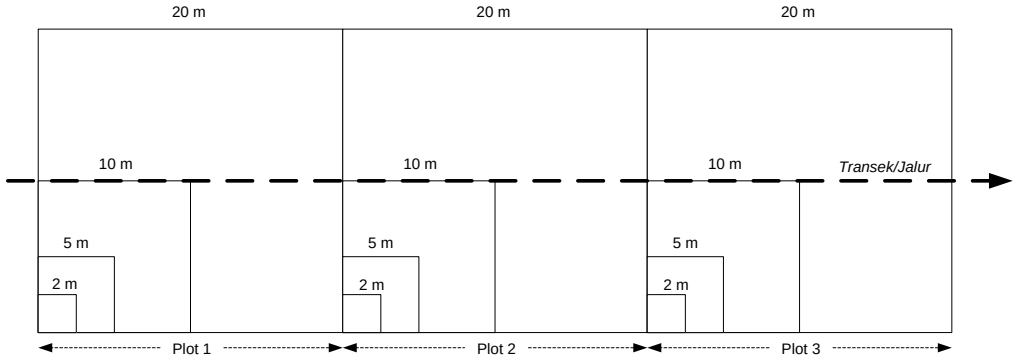


Figure 13. Location of the Carbon Stock Measurement Plot Path



Information:

- Seeding and understorey level (2 x 2 meter)
- Stake level (5 x 5 meter), DBH (2 – 10 cm)
- Pole level (10 x 10 meter), DBH (10 – 20 cm)
- Tree level (20 x 20 meter), DBH (>20 cm)

Figure 14. Design plot of carbon stock measurement samples

Carbon Stock Inventory

The activity of inventorying carbon stocks for above-ground biomass (AGB) in the Pile, Tree and Tree classes in the form of DBH measurements of trees using tape diameter, identification and recording of species and numbers of species and taking examples of wood representing each species (Figure 15).

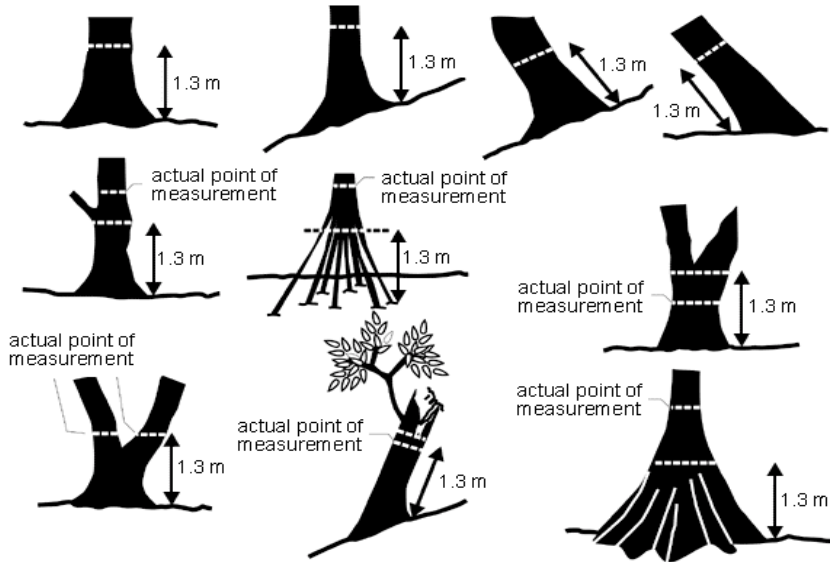


Figure 15. Measurement of Chest Height in Various Tree Conditions

Each sample of the wood is weighed in the wet field and then taken to the laboratory for drying and weighing the dry weight, so that the specific gravity (BJ) will be known.

Whereas for the measurement of biomass in seedlings and understorey classes is carried out as follows (SNI 7724: 2011):

a) cut all seedlings and understorey on the ground using cuttings scissors;

b) weigh the total wet seedling and understorey wet weight in the measurement plot area;
c) take and weigh the wet weight of the sample as much as ± 300 grams;
d) do the drying by using an oven in a laboratory with a temperature range of 70 ° C to 85 ° C until it reaches a constant weight;
e) weigh the dry weight of seedlings and understorey;
f) analyze organic carbon in the laboratory to see the carbon content

Measuring carbon stocks on peat soil is done by measuring the depth of peat soil using a soil drill at every distance of 200 - 300 meters on the stub path to the plot and taking at least 3 soil samples. The soil samples were analyzed at the laboratory to determine the weight of the contents and Organic Carbon Content.

Carbon Stock Estimasion

The estimated carbon stock is the second step of the carbon stock assessment carried out to find out (a) carbon stocks from above and below biomass, and (b) peat carbon stocks.

The amount of carbon stock in the valuation is expressed in tons of carbon per hectare (tC / ha). As defined by IPCC (2006), there are five carbon pools, namely soil biomass, underground biomass, dead wood, litter, and soil organic matter. In assessing carbon stocks in RSPO GHG procedures, this assessment only needs to take into account above-ground biomass (AGB), underground biomass (BGB) and soil organic matter. Soil organic matter only needs to be estimated if peat soil

Above Ground Biomass **(AGB)**

The general equation used in estimating carbon stocks for above ground biomass is:

***Massa Karbon (ton) = Biomassa* x (*Faktor Konversi Karbon*)**

The carbon conversion factor estimates the carbon component of vegetation biomass. This factor can be produced for a particular forest type, or using a standard value from the IPCC of 0.47 (IPCC, 2006).

Allometric equations for estimating biomass use the equation Ketterings et al (2001), namely:

$$TDW = 0{,}11 \text{ x x } \rho \text{ x(DBH)}^{2.62}$$

Information**:**
TDW = biomassa (kg); ρ = wood density (gr/cm^3), DBH = diameter setinggi dada (cm)

In accordance with the sample plot design above, there are several formulas to determine the value of biomass and carbon stocks for the stake class, pole, tree, seedling and understorey, namely:

a) Calculation of Biomass and carbon per Ha for stake level (5 x 5 meters)
   - The value of biomass is calculated using the formula for using BJ and DBH from wood tree samples from the plot location
   - Temporary carbon stock values (Cs) for stake are calculated with 0.47 x biomass value (Kg)
   - The carbon stock value for the stake (ton C / ha) is ((Cs) / 1000) x (10000/25)
b) Calculation of Biomass and carbon per Ha for pole level (10 x 10 meters)
   - The value of biomass is calculated using the formula for using BJ and DBH from wood tree samples from the plot location
   - Temporary carbon stock values (Cs) for poles are calculated with 0.47 x biomass value (Kg)
   - Carbon stock values for poles (tons C / ha) are; ((Cs) / 1000) x (10000/100)
c) Calculation of Biomass and carbon per Ha for Tree level (20 x 20 meters)

- The value of biomass is calculated using the formula for using BJ and DBH from wood tree samples from the plot location
- Temporary carbon stock values (Cs) for trees are calculated with 0.47 x biomass value (Kg)
- Carbon stock values for trees (tons C / ha) are ((Cs) / 1000) x (10000/400)

d) Calculation of Biomass and carbon per Ha for seedling and understorey levels (2x2 meters)
- The value of biomass is obtained from laboratory analysis using the formula: Bo = (Bx x Bbt) / Bbs, where Bo = weight of organic matter (kg), Bks = sample dry weight (kg), Bbt = total wet weight (kg), Bbs = sample wet weight (kg).
- Temporary carbon stock values (Cs) for seedlings and understorey are calculated with 0.47 x biomass or organic matter value (Kg)
- Carbon stock values for trees (tons C / ha) are ((Cs) / 1000) x (10000/400)

Below Ground Biomass (BGB)

In assessing carbon stocks in the RSPO GHG procedure it is explained that it is not possible to measure BGB (root biomass) directly and the preferred approach is to use the standard BGB AGB ratio (commonly referred to as the shoot root ratio).

The ratio of shoot roots varies depending on the type of vegetation and local situation, and for the purposes of the RSPO GHG Assessment Procedure it is recommended that a value of 0.18 be used for Southeast Asian tropical

The general equation used in estimating carbon stocks for subsurface biomass (BGB) is:

$$\mathbf{B_{bp} = RAP \times B_{ap}}$$

Information:

B_{bp} = biomassa di bawah permukaan tanah (kg); RAP = Nilai Rasio akar: pucuk atau sebesar 0,18; B_{ap} = biomassa di atas permukaan tanah (kg)

Peat Carbon Stock

Some parameters needed to calculate soil carbon stocks on peatland are as follows:
1) Content weight (g / cm3 or kg / dm3 or t / m3)
2) Organic carbon content (% based on weight or g / g or kg / kg)
3) Depth or thickness of peat (cm or m)
4) Land area where carbon stock will be estimated (ha or km2)

The total amount of peat carbon stock in assessing carbon stocks in the RSPO GHG procedure is calculated

$$\mathbf{C_{gambut}\ (ton\ C) = A\ (ha) \times 10.000\ m^2/ha \times D\ (m) \times BD\ (ton/m^3) \times C\ (\%)}$$

Information:

A = total area of peat in hectares; D = average peat depth (meter); BD = peat content weight (ton/m^3); C = peat carbon content in the percentage of dry weight

Total Carbon Stock

a. Carbon Stock The total in sample plots for above-ground biomass (AGB) and below ground biomass (BGB) are calculated with the following

$$\mathbf{C_{plot} = C_{AGB} + C_{BGB}}$$

Information:

C_{plot} = Total Carbon Stock in the plot (Ton C/ha)

C_{AGB} = Stock Total carbon above ground (Ton C/ha), which is the summation of Carbon Stock for poles, stakes, trees and seedlings.

C_{BGB} = Stock of Total Carbon below ground biomass (Ton C/ha)

b. The Total Carbon Stock in the land / class cover class is calculated by the following equation:

$$C_{stratum} = (C_{Plot} / n_{stratum}) \times Luas\ stratum$$

Information:

$C_{stratum}$ = Stratum Total Carbon Stock (Ton C)
C_{plot} = Total Carbon Stock in the plot in the strata (Ton C/ha)
$n_{stratum}$ = Number of Plots in the stratum

c. Total Carbon Stock in the RSPO GHG procedure in the study area is calculated using the following equation:

$$C_{Total} = C_{Total\ Stratum} + (C_{Gambut} \times A_{Gambut})$$

Keterangan:

C_{Total} = Total Carbon Stock in the study area (Ton C)
$C_{Total\ Stratum}$ = Carbon Stock Total all land cover / stratum classes (Ton C)
C_{Gambut} = Stok Karbon Tanah Gambut (Ton C/ha)
A_{Gambut} = Luas total gambut (ha)

Compilation of Carbon Stock Maps

The carbon stock distribution map in the RSPO GHG procedure in the assessment area was prepared based on an analysis of land cover distribution and potential of peat distribution and the results of the calculation of estimated carbon stocks.

Assessment of GHG Emissions from New Plantings

An assessment of the magnitude of GHG emissions from new planting plans in oil palm plantation areas in the RSPO GHG procedures uses the GHG Calculator for new developments issued by RSPO.

2.5. LUC Assessment

a. Assessor Credentials

Name : Kasuma Wijaya, S.Hut, M.Si
Address : Perum Griya Melati Blok C3/23, RT. 003, RW. 013, Kelurahan Bubulak, Kecamatan Kota Bogor Barat, Kota Bogor, Provinsi Jawa Barat
Position : Land covers image analysis and GIS experts
Register : Registered HCS Approach Practitioners

b. Methods

Relevant time of clearance period	
⊠ November 1, 2005 – November 31, 2007	⊠ December 1, 2007 – December 31, 2009
⊠ January 1, 2010 – May 9, 2014	⊠ After May 9, 2014

Date of satellite image acquisition for each time of clearance period		
Period	**Date of acquisition**	**Cloud cover (%)**
Before November 1, 2005 (baseline)	7 August 2005	< 5 %
November 1, 2005 – November 31, 2007	25 May 2007	< 5 %
December 1, 2007 – December 31, 2009	18 August 2009	< 5%
January 1, 2010 – May 9, 2014	25 May 2013	< 5%
May 9, 2014 – 2016 (HCV area identified)	19 August 2016	< 5%
After HCV area identified	25 July 2019	< 5%
After becoming RSPO member (if relevant)	Not relevant	-
After the management unit acquired (if relevant)	Not relevant	-
Latest satellite image used for ground truthing	25 July 2019	< 5%

Satellite images used in the LUC Analysis	
Satellite Name	Landsat TM 5, Landsat 8, dan Sentinel 2
Resolution	30 meter (Landsat), 10 meter (Sentinel 2)

List of data and document used in the LUC Analysis		
1. Land clearance progress map (montly)	☐ Available/used	⊠ Not available
2. Land clearance progress data (montly)	☐ Available/used	⊠ Not available
3. Planting year map	⊠ Available/used	☐ Not available
4. Planting year data	⊠ Available/used	☐ Not available
5. Land compensation progress map (if applicable)	☐ Available/used	⊠ Not available
6. Land compensation progress data/document (if applicable)	☐ Available/used	⊠ Not available
7. Soil map	⊠Available/used	☐ Not available
8. Slope map	☐ Available/used	⊠ Not available
9. Watershed-hydrology map	⊠ Available/used	☐ Not available
10. HCV assessment report	⊠ Available/used	☐ Not available

Image processing

Radiometric correction	☒ Conducted	☐ Not conducted
Geometric correction	☐ Conducted	☒ Not conducted

Image analysis		
☐ Supervised classification	☐ Unsupervised classification	☒ Object based visual interpretation

Survey design	
Number of sample	The minimum number of sample needs is calculated with the Taro Yamano formula (1967)
Sampling method	Teresterial Sampling
Reference for sampling method	RSPO Guidance for Land Use Change Analyisis (Revised version March 2017)

Field verification	
Validating the land cover data	ground truthing
Compiling information related to historical land use in the study area	Compilation of historical information on land use by combining information from (1) ground truthing, (2) document review, dan (3) interview
Identification the loss of social HCVs	Conducted by review of HCV documents and in-depth interviews with key responden
Identifying the loss of areas where planting is prohibited by RSPO P&C or by country's specific legislation (e.g. riparian zones, steep slope, deep peat)	Analysis of the data resulting from the overlay between data on land cover changes in each period of liability with the distribution of areas not allowed by P & C for oil palm planting

Image validation	
Method used for LUCA accuracy assessment	the Kappa Accuracy method

Change detection analysis
In LUC analysis activities, change detection analysis is based on review of company documents and in-depth interviews. Review of company documents including acquisition documents and HCV Report. In-depth interviews with key respondents include local community leaders, and company staff who have long been in the study area, relating to the land cover baseline, history of land ownership and activities, land clearing activities and community cultivation patterns.

Vegetation coefficient
Grouping land cover classes into the vegetation coefficient category follows the guidance RSPO, which in principle consists of 4 categories, namely (1) Coefficient 1.0, for Primary Forest land cover, (2) Coefficient 0.7, for Secondary Forest land cover, (3) Coefficient of 0.4, for mixed garden or agroforesry land cover, and (4) coefficient 0.0, for non-forest cover such as fields, rubber, oil palm, rice fields, shrubs and grasslands.

2.6. FPIC process

a. Assessor Credentials, conducted by Joko Mijiarto, S.Hut, M.Si (Expertise : Socio-Economic Forestry, Social & Environment Impact Assessment, HCV 5 & 6, FPIC and Partisipatory Mapping, Community Development.

b. Methods

FPIC or activities are carried out on December 2019

Referensi and Guidelines FPIC

The references and guidelines used as references in conducting FPIC studies at PT UAI are as follows:

1) Free, Prior and Informed Consent Guide For RSPO Members, RSPO Human Right Working Group 2015. Endorsed by the RSPO Board of Governors meeting on 20 November 2015 in Kuala Lumpur.

2) United Nations Declaration on the Rights of Indigenous Peoples, relating to FPIC (article 32), Lands and Territories (articles 20 and article 26), Displacement and the right to restitution and correction / submitting compensation (article 10, article 28), Representatives (article 18 , article 19), based on customary agreements (article 3, article 4, article 5, article 33 and article 34).

3) International Law Convention, which includes:

- International Convention on Civil and Political Rights
- International Convention on Economic, Social and Cultural Rights
- Convention on the Elimination of All Forms of Ethnic Discrimination
- ILO Convention No. 169 concerning Indigenous Peoples and Tribes.

The method used in the FPIC study consists of:

1). **Secondary Data Collection** by collecting documents needed (documentation) taken from village profiles or Village Medium Term Development Plans (RPJMDes), sub-districts in numbers, districts in numbers and or other library sources.

2). **Primary Data Collection** by:

- ✓ Conditional interviews as well as in-depth interviews with community members who are considered to know the information needed (Village Head, BPD Chairperson, LPM Chairperson, RW Chairperson, RT Head, community leaders, religious leaders, local agency leaders, etc.).
- ✓ Discussions with community groups (Focus Group Discussion) and (Rapid Rural Appraisal). FGD and RRA participants consisted of Village Heads, BPD Management, LPMD, RW / RT leaders, representatives of youth leaders, representatives of religious leaders, representatives of women leaders, and representatives of other community leaders.
- ✓ Observation of physical environmental conditions, social environment, social relations, local community habits such as land use patterns and natural resources or forest resources.

3). **Triangulation data**, integrated methods to verify each other on emerging issues, opinions and ideas such as the emergence of the latest values of norms and rules on land use, natural resource management, and SDH management that apply in the local community.

CHAPTER 3. SUMMARY OF FINDINGS

3.1. SEIA

Potential Positive and Negative Developments

The presence of oil palm plantations of PT. United Agro Indonesia (PT. UAI) has provided various impacts as well as various potential impacts, both positive and negative values on the external environment (the community) as well as bringing up potential conflicts. In the context of encouraging the achievement of plantation management objectives, various positive impacts must be truly achieved. However, various negative impacts that have the potential to cause social conflict and will adversely affect the external environment, so from now on it is necessary to develop a strategy and management model so that the objectives of sustainable plantation management.

Various impacts that have occurred and are predicted to occur that are of negative value with the presence of companies that have the potential to give birth to conflicts do not always build on a single reason. It is seen that the emergence of negative impacts and potential conflicts that accompany the management of oil palm plantations are born and are triggered by various conditions which are plural and interrelated to one another. The plural nature of the source of the problem that is expected to give rise to negative impacts and potential conflicts requires two models of management, namely strategic / sustainable impact management and conflict-based impact management.

PT. UAI must avoid the occurrence of negative impacts from internal company, through efforts to conduct various evaluations of management that have been implemented to provide improvements to management that will be applied internally. The company's internal strengthening will support the company's success in dealing with various problems and the negative impacts that are predicted to occur along with the implementation of various subsequent stages in the development of oil palm plantations.

The existence of PT. UAI has given hope and also concerns in the community, while for the positive and negative impacts of PT. UAI has not been significant because the new company is at the development stage. Of every expectation, concern and impact that occurs the company must manage. Based on the identification of various hopes, concerns and impacts arising from existing activities need to be managed so that the company's positive image is maintained both in the community and in workers. Negative perceptions or community concerns, including: (1) the occurrence of river pollution (2) social jealousy between villages, (3) perception of road damage due to heavy vehicles owned by the company (4) the community does not have a career path due to limited education, (5) losing community competitiveness with workers from outside the area.

Socio-economic impacts to country, region and local communities (positive and negative impact include)

The study of positive and negative social impacts in the company environment includes components that form the basis (sustainability of social livelihoods) consisting of 5 components (Natural Capital, Human Capital, Financial Capital, Social Capital, and Physical Capital). In the plan to increase the area of PT UAI's oil palm plantations the environmental and social impacts on the community that occur are as in Table 5 below:

Table 5. Social Impact of the existence of PT UAI

No	Impact	Impact category	
		Positive (+)	Negative (-)
Nature Resources			
1.	Land compensation (LAND COMPENSATION) conducted by PT UAI will have to be in accordance with the hopes and desires of residents	√	
2.	Increased community interest in developing palm oil commodities	√	
3.	The reduction in land or land owned by the community around the company for the cultivation of agricultural rice fields, crops and vegetables or for plantations, so that it also has an impact on the reduced production of these commodities		√
4.	Community perception related to river water pollution by oil palm plantation management activities in fertilizing and spraying activities that use chemicals		√
5.	The existence of PT UAI reduces flooding in the surrounding villages.	√	
6.	Changing forest area or resources which causes a reduction in the source of meeting basic needs for wood for building materials, hunting areas, sources of fruits and vegetables and has an impact on reducing river water discharge.		√
7.	The flood is reduced	√	
Human resource			
8.	There are opportunities for the community to work in companies	√	
9.	Increased knowledge and skills in managing oil palm plantations based on work experience in the company, so that it can be applied in managing privately owned oil palm plantations.	√	
10.	Increased public awareness of education. Higher education is expected by the community to open better opportunities for their children if they will work later, such as in the oil palm companies as staff (monthly employees).	√	
Economic resources			
11.	Residents are hopeful if the release of land to the company to be accompanied by a plasma plantation (as a substitute for economic resources of citizens) as well as family members / children as well as can work in the company	√	
12.	Opening new jobs in addition to existing livelihood activities such as farming, gardening, entrepreneurship	√	
13.	The income of the surrounding community has increased with an alternative source of income, namely working at PT UAI	√	
14.	Increased ownership of community assets	√	
15.	Changes in land / land values	√	
16.	Business opportunities. Some communities can also be involved indirectly from company activities due to an increase in various needs for goods and services, so some people can increase their business in providing goods and services for company employees	√	
17.	Fixed income. With the presence of the company is expected to provide certainty of income every month by working in the company. The existence of the company provides a guarantee of income for the community from the wages of employees every month, so that the community can manage and manage household finances better with the existence of certainty of income	√	
18.	Opened the opportunity for the community to get a smallholding	√	
19.	Increased village funds with the village treasury land	√	
20.	Increasing the velocity of money in society can result in an increase in prices of basic necessities		√
Social resouce			
21.	The positive perception of the community towards PT UAI which is always welcome and always ready to help the activities and needs of residents, such as the ease of borrowing heavy equipment from the company for road repair	√	
22.	Improving relations between families such as the community is easier to visit with relatives in other places with easier access to roads	√	
23.	Social jealousy between villages, because Dadahup Village considers older than other villages, so if there are programs from the company, it is hoped that the older Subvillage should get more attention.		√
24.	Negative perceptions of citizens towards CSR programs that are considered to be minimal even do not yet exist for each village		√

No	Impact	Impact category	
		Positive (+)	Negative (-)
Physical / Infrastructure Resources			
25.	Open access road connecting the Subvillages, villages and districts	√	
26.	Opened access roads make it easier for people to get basic needs. Besides being better market access, it also makes it easier for traders from outside to come to the village	√	
27.	The opening of access roads makes it easier for students to get to school. This facility will indirectly increase people's motivation to send their children to higher education	√	
28.	The opening of access roads indirectly increases the village economy	√	
29.	It is getting easier for the people to worship because there is assistance to build a mosque by PT UAI	√	
30.	The company helps build boreholes so that the community can more easily obtain clean water	√	
31.	The connecting road between villages or Subvillages in the form of a road as well as a road that is often passed by PT UAI operations, this raises the perception that the road will be damaged because it is often passed by large vehicles		√
32.	An open road network can increase health risks, especially breathing because roads can be very dusty especially during the dry season, while during the rainy season can increase the risk of accidents due to slippery and muddy roads		√
33.	Heavy equipment assistance for road repair	√	
34.	Relief bore well	√	

Socio-economic impacts in respect of emergent communities (workers, suppliers etc.)

The worker is one of the important stakeholders to be identified and considered by the management level because it has a direct influence in driving the plantation business of PT. UAI Identification and management level of the right workforce will be able to improve performance, efficiency which will ultimately be able to increase the production capacity of the garden. Some internal aspects examined in this chapter are: (1) labor recruitment system, (2) aspects of protection, development and improvement of labor welfare, (3) industrial relations, (4) competency development, (5) career path, (6) labor welfare benefits, and (7) communication patterns.

Employees' perception of working conditions at PT. UAI is very important to consider as an evaluation material for management to improve the quality of work of all employees for company productivity. Employees has an assessment of the working conditions at PT. UAI based on the experience gained during work. Overall employees tend to be satisfied with the work climate contained in PT. UAI. However, there are still shortages or dissatisfaction of workers with some aspects, especially related to overtime / premiums.

Issues raised by stakeholders and assessors comments

Table 6. Analysis of Stakeholders in the PT UAI.

Stakeholder	Linkages	Role	General Perception
PT. UAI	Company representation as plantation manage	• Implementing oil palm plantation management • Oversight of the Company's area from disturbance, encroachment or land claims / area permits for plantation locations	• Expecting community support so that all company activities run smoothly.
Head Village	Legitimacy of the existence of PT. UAI	• Mediator for parties involved in the problem • Company partners in the administrative affairs of the District government. • Assisting the socialization of company programs	• Support the existence of PT. UAI in helping improve the economy of the community • Expect many local people to work as company employees. • Entrepreneurship training to explore alternative community livelihoods
Community Leaders / Village Government Officials	Legitimacy of the area of PT. UAI and adhesives to the corporate social environment.	• Mediators between companies and community groups. • Mediators between companies and village government officials.	• Support the existence of PT. UAI in helping the community's economy • Expect a sustainable social assistance program.
General public	Providing legitimacy for companies in managing oil palm plantations	• Become a company partner in maintaining the company's garden. • Become the company's main partner in providing labor. • Objects that are entitled to the company's CSR program • Affected parties	• Expect a mutually beneficial partnership. • Entrepreneurship training. • Social programs for village development
Community landowners	Legitimacy, social and business support	• Location owner • Company partners in conducting business • Affected parties • Become a partner in plasma plantation management	• Expect the plasma program to start immediately • Prioritized in work • Get compensation for land acquisition
District Government	Legitimacy of the existence of PT. UAI	• Company partners in the coordination of activities between villages • Company / intermediary partners in administrative matters with the district government	• Support the existence of PT. UAI in helping improve the economy of the community. And hopes for the company's role in the development of the surrounding village area and the sustainable empowerment of surrounding communities.
Regional government	Legality of environmental and location permits to PT. UAI	• Company partners in coordinating activities in the District and District • Company / intermediary partners in administrative matters with the Central Government.	• Support the existence of PT. UAI in helping the community's economy. And hopefully the company's role in development in the surrounding village area.

List of legal documents, regulatory permits and property deeds related to the areas assessed

Tabel 7. List of legal documents, regulatory permits and property deeds related to the areas assessed

No	List of Document	Certificate Letter	Agency	Area
1	Location Permit	No.356/ADMINSDA/2012, August 14, 2012	Kapuas Regent – Central Kalimantan	4,000
2	Location Permit	No. 107/ADMINSDA/2015, August 30, 2015	Kapuas Regent – Central Kalimantan	2,723.55

3.2. HCV Assessment

3.2.1. National and or regional context

Key biodiversity area is the area identified nationally with global significance. Some international organizations have identified key areas for biodiversity with their respective critera. Internationally recognized key biodiversity areas included:

- ***Ramsar Sites***; there are two Ramsar Sites in Borneo, namely Tanjung Puting National Park (Central Kalimantan) and *Danau Sentarum* National Park (West Kalimantan). The permit area of UAI is not within the Ramsar site.
- ***Heart of Borneo* (HoB);** is an initiative that involves 3 countries namely Malaysia, Brunei Darusallam and Indonesia. The HoB location is a conservation area that is located in the middle (heart) of Kalimantan Island in 3 (three) countries. In Indonesia the conservation areas included in the HoB are Lake Sentarum National Park, Gunung Palung, Bukit Raya Bukit Baka, Betung Kerihun and Kayan Mentarang. The PT UAI location permit area is not included in the HoB area.
- ***Sebangau National Park***, the conservation area around the area of PT UAI's location permit is Sebangau National Park (TN) in the west with a distance of ± 59.9 km and not directly adjacent to the location permit area. The Sebangau National Park land cover is secondary forest and swamp shrub, while the land cover between the location permit and PT UAI is dominated by shrubs and oil palm plantations.
- ***Important Bird Area (IBA);*** Around the permit area of PT. UAI is an IBA region located in the northeast and southwest. The closest distance between the IBA region and the area is around 59.31 km. The land cover condition of the IBA region is mostly secondary forest, while the land cover between the PT. UAI with the nearest IBA region is dominated by swamp shrub farming, rice fields, oil palm plantations, and open land.
- ***Endemic Bird Area (EBA);*** The EBA area around the PT. UAI is in the southeast. The closest distance between the EBA region and the area is around 90.20 km. The condition of EBA area land cover is mostly secondary forest, while the land cover between the PT. UAI with the nearest EBA region is dominated by swamp shrubs, rice fields and oil palm plantations.
- ***Ecoregional;*** Based on the overlap of the PT UAI permit area map with the biofisiographic map of the 2008 High Conservation Value Toolkit, the PT UAI permit area is included in the Southren Coalstal Lowlands and is included in the Kalimantan Fluvial Plain and Peatland Complex / Kahayan Complex Complex.
- ***Distribution of Orang Utans***; Based on the overlay of the Map of the Distribution of Orang Utans according to IUCN 2016 version 3 and Forina 2014 as well as with the Map of PT UAI license area, some of the PT UAI permit areas are included in the distribution of orang utans;
- ***Protected Forest***, Protected Forest (HL) in the vicinity of the PT. UAI is one location, namely HL PLG (to the west), but it is not directly adjacent to the permit area. The closest distance to the permit area of PT. UAI with protected forest is around 4.59 km. The protected forest still has land cover in the form of secondary forest, while the land cover between the PT. UAI with protected forest in the form of swamp shrubs, oil palm plantations, and open land;
- ***Peat Hydrological Area*** (KHG), Peat Hydrological Area (KHG) found within the permit area of PT. UAI KHG around PT. UAI still has land cover in the form of secondary forest, while land cover between the PT. UAI with protected forest in the form of swamp shrubs, oil palm plantations, and open land.

In this regard, the PT UAI permit area does not provide important supporting functions for protected forests and biodiversity areas in the landscape and the development of oil palm plantations in the PT UAI permit area will not impact on protected forests, conservation areas, EBA areas and IBA and KHG areas . However, by identifying HCV in the area of PT UAI's location permit and future management and monitoring action plans, it is expected to make a significant contribution in efforts to preserve biodiversity, environmental services and the socio-cultural values of the community at regional and national levels.

3.2.2. Landscape Contexs

Land Cover

Based on data analysis, land cover in PT UAI's location permit area, mostly in the form of oil palm plantations and mixed rubber plantations. Based on the interpretation of Landsat 8 Oli Band 654 Path / Row 118/62 ETM Satellite images in 2005, 2007, 2009, 2014 and 2016, as well as data collection in the field shows that land use within the PT. UAI there are changes from year to year. This can be seen from changes in land cover from year to year which has increased or decreased. The change in land use due to conversion in the area of PT. The UAI is presented in Table 8.

Table 8. Land Use Changes Due to Conversion in the Permit Area of PT. UAI

No	Land Cover Types	Area (ha)				
		Year 2005	Year 2007	Year 2009	Year 2014	Year 2016
1	Secondary Swamps Forest	1,616.77	128.98	128.98	0.00	0.00
2	Shrub	4,167.55	6,537.24	6,537.24	1,235.79	1,235.79
3	Oil Palm	0.00	0.00	0.00	2,353.44	2,353.44
4	Mix Rubber	0.00	0.00	0.00	2,752.83	2,752.83
5	Swamp	0.00	0.00	0.00	13.81	13.81
6	Field Rice	0.00	57.33	57.33	0.00	0.00
7	Open Land	0.00	0.00	0.00	367.67	367.67
Total		**6,723.55**	**6,723.55**	**6,723.55**	**6,723.55**	**6,723.55**

Based on the analysis of land cover changes that occurred from 2005-2016 as presented in the table above shows a tendency to decrease changes in secondary swamp forest and shrubs on one side and an increase in the area of land cover for oil palm, mixed rubber, swamp, rice fields and open land. Thus, it can be concluded that within the past 10 years there has been a change in land cover that has occurred across all of PT UAI's location permits.

Land Use at the National Level

Based on the Map of the Forest and Water Regions of Central Kalimantan Province Scale 1: 250,000 (SK.529 / Menhut-II / 2012, dated September 25, 2012), the area of PT UAI's licenses including Other Use Areas (APL); whereas according to the Kapuas Regency Spatial Pattern Plan Year 2014 - 2034 the area of PT UAI's permit includes the Agricultural Area, while according to the Indicative Map of Delaying the Granting of New Permits (PIPPIB) Revision VIII on May 27, 2015, the PT UAI permit area is not included in the moratorium area. The information shows that the existence of PT UAI's permit area in the Other Use Areas (APL) or Agricultural Areas guarantees the certainty of the area and is included in the safe category in the long run.

Based on the Kapuas RTRWK map for 2014 - 2034, the status of the area in various land covers within the permit area of PT. UAI can be divided into one type, namely dry land agriculture covering an area of 6,723.55 ha. Specifically for land cover in the form of shrubs and swamps as a whole, including Dry Land Agriculture. In connection with these figures, swamps and shrubs, if projected based on the Kapuas RTRWK in the future, will turn into dry land agriculture. Changes in land cover in and around PT. UAI within the HCV assessment limits based on the Kapuas RTRWK are presented in **Table 9**.

Table 9. Land Cover Changes in and around the Permit Area of PT. UAI Based on Kapuas RTRWK

No.	Land Cover	Area (ha)		
		Year 2016	Projection according to the Kapuas Spatial Planning	
			Dryland farming	Number
1	Shrub	1,235.79	1,235.79	1,235.79
2	Mix Rubber Plantation	2,752.83	2,752.83	2,752.83
3	Oil Palm Plantation	2,353.44	2,353.44	2,353.44
4	Swamp	13.81	13.81	13.81
5	Open Land	367.67	367.67	367.67
Total		**6,723.55**	**6,723.55**	**6,723.55**

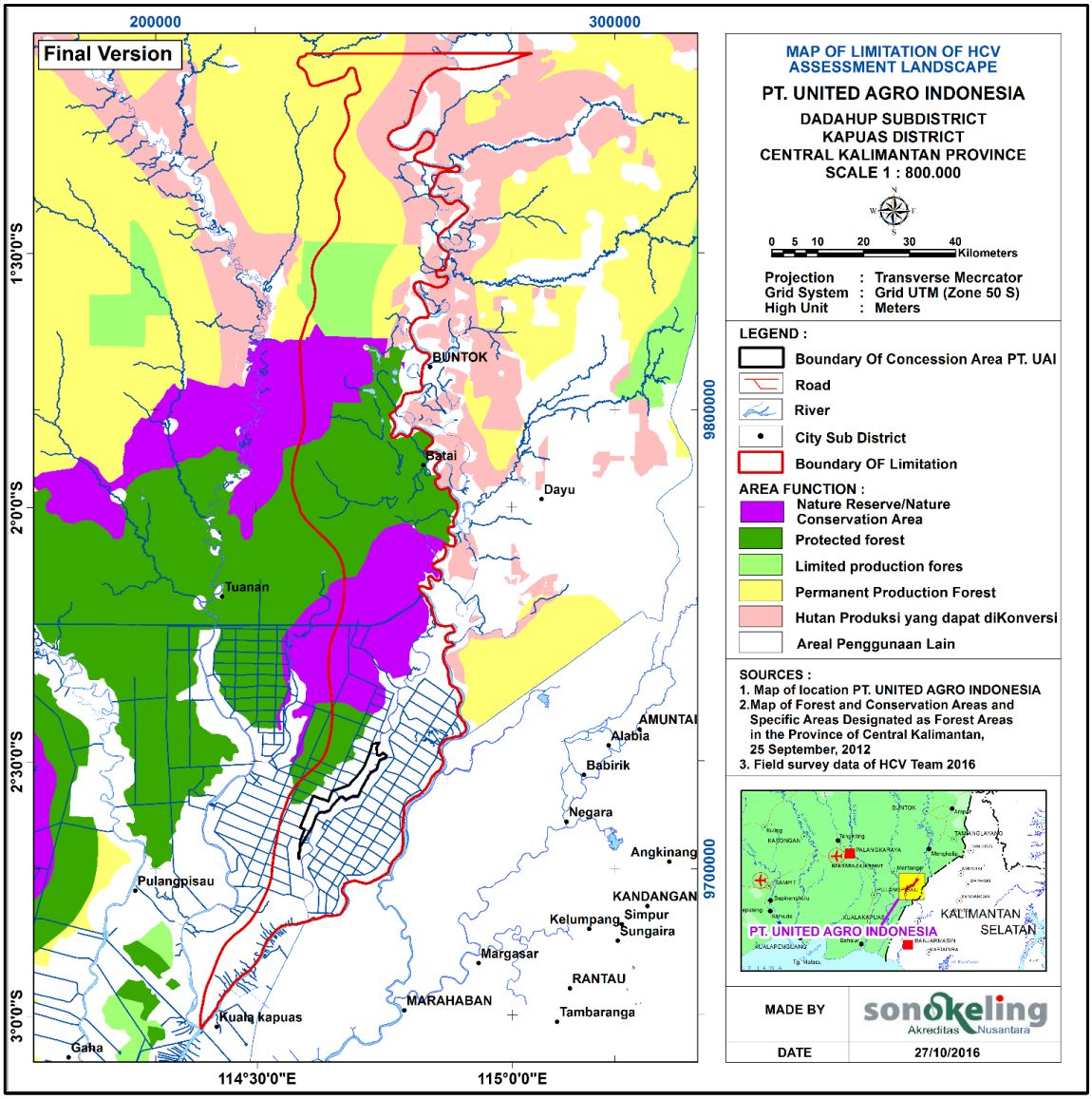


Figure 16. Map of Landscape HCV Assessment Boundary in the Permit Area of PT. UAI

Physical Environment

The area of PT UAI's permit is in the landscape of the Barito watershed (Upper Barito Upper watershed). In the permit area of PT UAI found 9 (nine) rivers / creeks and 3 (three) PLG canals, namely S. Blusoh, S. Keladan, S. Sengkulit, S. Gampa, S. Pusa, S. Bulan, S. Patua, S. Handel Begantung, S. Dadahup, PLG-Pelingko Canal, PLG-Rigai Canal and PLG-Nunuk Canal. In general the climate in the PT UAI permit area is based on rain data obtained from the Tjilik Riwut Airport Palangkaraya Meteorological Station in 2006 - 2015, according to the Schmidt-Ferguson classification system (1951), included in Climate Type A (very wet) and Climate B (Wet) , with a 12 month wet month, does not have a moist month and a dry month. Rainfall in the region for 10 years fluctuates. Annual rainfall in the PT UAI permit area for 10 years ranges from 539.70 - 4,508.00 mm, with an average annual rainfall of around 2,911.90 mm. Based on the Landsystem Map from RePPProT (1988), it can be seen that in the PT UAI permit area consists of 1 (one) land system, namely KHY (Kahayan) covering 6,723.55 Ha (100%). The KHY (Kahayan) land system is a combination of estuarine plains and riparian plains (rivers). The dominant types of rock and soil parent material are alluvium, young river sediment and peat. Soil types that are likely to be found

in the KHY land system include: Fluvaquent, Tropaquept and Tropohemist. Other types of soil can also be found in this land system. Based on the Geological Map of the Kapuas Regency, Central Kalimantan Province, the geological formation in the PT UAI permit area consists of 1 (one) type, namely the Aluvium Formation covering an area of 6,723.55 Ha (100%). Based on the Landsystem Map of RePPProT (1988), the type of land found in the PT UAI permit area is the type of Tropaquepts Fluvaquents and Sulfaquents (Alluvial) covering 6,723.55 Ha (100%), the area of the PT UAI permit area is in the altitude range between 9 - 9 34 masl .. Based on the slope class, the slope class in the PT UAI permit area consists of one type, namely the slope class 0-8% covering an area of 6,723.55 Ha (100.00%).

Biodiversity

Kalimantan has several types of tropical habitat that are rich in biodiversity. The location of area additional permit of PT SMA, being located in Kalimantan, certainly can not be separated from such richness of biodiversity. In Kalimantan, there are about 225 species of terrestrial mammals, 44 of which are endemic to the island (Payne *et al*., 2000), 639 bird species, of which 37 are endemic and 358 are resident species (MacKinnon *et al*., 2000), 166 species of snakes (Stuebing, 1991), about 140-150 amphibian species (Inger and Stuebing, 1997), and 394 species of fresh water fish, of which 149 are endemic (MacKinnon *et al*., 1996). A number of unique species are, for example, Orangutan (*Pongo pygmaeus*), the proboscis monkey or long-nosed monkey (*Nasalis larvatus*), Malay sunbear (*Helarctos malayanus*), the Sunda clouded leopard (*Neofelis diardi*), and Bulwer's pheasant (*Lophura bulweri*).

Primate species of global concern on the island of Borneo, the Orang Utan, known only concentrated in several places in Kalimantan. Based on the overlay of the Map of the Distribution of Orang Utans according to IUCN 2016 version 3 and Forina 2014 as well as with the Map of PT UAI permit area, some of the PT UAI permit areas are included in the distribution of orang utans. Wealth species of wildlife found in the permit area of PT UAI are 53 species of wildlife that can be grouped into 35 families, with details: 10 mammals and 7 families, 41 species of birds and 26 families, and reptiles of 2 species and 2 families. For amphibians not found in the region. This is probably due to the fact that the area experienced a fire in 2015. Based on its protection status, the types of wildlife encountered in the permit area of PT. UAI that is protected according to PP No. 7 of 1999 as many as 14 species (as many as 4 species of mammals and as many as 10 species of birds); included in the CITES list of 15 species, with details: Appendix I for 3 species (mammals), Appendix II for 11 species (mammals for 4 species, birds for 5 species and reptiles for 2 types), and Appendix III for 1 species (mammals)); while the wildlife included in the IUCN Red List are 53 species, with details: including the LC / Least Concern (low risk) category as many as 46 species (5 mammals, 39 species and 2 reptiles), NT / Near Threatened (almost threatened) as many as 3 species (1 type of mammals and 2 types of birds), 2 types of VU / Vulnerable (vulnerable) (mammals) and 2 types of EN / Endangered (critical) (mammals).

Kalimantan also has more than 2000 species of orchids and 1000 species of ferns, even it is a distribution center of carnivorous plants, the *Nepenthes* sp. The endemism of flora on this island is high, approximately 34% of the entire plant species, but only has 59 unique genera of total 1500 genera. The proximity of study site in Kalimantan allows the existence of floral species that are endangered and protected by Indonesian regulation and legislation, mainly the members of *Dipterocarp family* (Shorea *spp*., Dipterocarpus *spp*.) in additional to other protected species such as the *Nephentes family*. All these species area protected by the Indonesian Government through the Decree of Agriculture Minister No. 54/Kpts/Um2/1972 and the Decree of the Forestry Minister No. 261/Kpts-IV/1990. On the other hand, those species are mostly exploited commercially, since the trees are of local communities' interests for their livelihood. The plant species found in the study area that are categorized as protected according to the Government Regulation No. 7/1999 are ***terambo*** (*Nepenthes gracilis*) and tengkawang (*Shorea pinanga*, red meranti), while those

categorized as Critically Endangered are *Majau Air* (*Shorea lepidota*) and *Tengkawang Layar* (*Shorea smithiana*).

The number of plant species found in the PT UAI permit area is 114 species which can be grouped into 55 families. Based on its protection status, in the area of PT. UAI found no protected plant species according to PP No. 7 of 1999; however, in this area one plant species was found on the CITES Appendix II List. There were 5 species of plants in the area that were included in the IUCN Red List, with details: 4 species included in the LC / Least Concern (low risk) category and 1 plant included in the CR / Critically Endangered category

Protected Forest and Conservation Areas

Within the area of PT UAI's permit there was no Protection Forest (HL) found; but in the surrounding area there are protected forests as many as one location, namely in the west, the location is not directly adjacent to the permit area and is about 4.59 km from the permit area. The protected forest still has land cover in the form of secondary forest. The condition of land cover between PT UAI's permit area and protected forest in the form of swamp shrubs, oil palm plantations and open land. Conservation areas were not found within the PT UAI permit area; but in the vicinity two conservation areas are found, namely Sebangau National Park (to the west). The conservation area is located not bordering the PT UAI permit area and the closest distance to the conservation area with the PT UAI permit area is around 59.9 km (Sebangau National Park). The condition of the Sebangau National Park land cover is mostly secondary forest and swamp shrub. The PT UAI permit area does not have or is within the scope of the IBA (Important Bird Area), the closest distance between the important bird distribution area and the area is around 59.31 km (southwest). The PT UAI permit area does not have or is within the Endemic area (Endemic Bird Area), the closest distance between the endemic bird distribution area and the area is around 90.20 km (to the southeast). The location permit area is bordered by the Peat Hydrology Area (KHG) and acts as a supporter for important areas for water management in the peatland landscape. In this regard, the PT UAI permit area does not provide important supporting functions for protected forests and biodiversity areas in the landscape and the development of oil palm plantations in the PT UAI permit area will not impact on protected forests, conservation areas, EBA areas and IBA areas.

Ecosystem

Based on the overlap of the PT UAI permit area map with the biophysiographic map of the 2008 High Conservation Value Toolkit, the PT UAI permit area is included in the Southren Coalstal Lowlands. From the overlap of the PT UAI permit area map with the Kalimantan Island Ecoregion Map (Ministry of Environment, 2013), the PT UAI permit area is included in the ecoregion of the Kalimantan Fluvial Plain and the Organic / Peatland Complex of the Kahayan - Kapuas - Mahakam Complex. The basic characteristics of the two ecoregions are as follows:

- **Kalimantan Fluvial Plain;** This ecoregion unit is a unit formed by the process of deposition of alluvium materials (gravel, sand, clay, and silt) by streams. Rivers that play an important role in the process of forming ecoregion units in Kalimantan include the Kapuas, Barito and Mahakam Rivers and their tributaries. This ecoregion unit is characterized by a flat relief with a slope of 0-3%, material in the form of alluvium deposition, horizontal structure with regular coating (coarse material deposition at the bottom, which is getting smoother upward). This unit only occupies a relatively narrow area around the flow of rivers.
- **Organic / Peatland Complex of Kahayan - Kapuas - Mahakam Complex**; This ecoregion unit is similar to the alluvial plain, but is composed of decomposed material from organic matter, which is associated with swampy areas or small basins with a choppy to wavy topography. This unit is almost spread widely on the island of Borneo, which is one of the characteristics of the ecoregion of Borneo, which is rarely found in other regions in Indonesia.

Its existence is generally influenced by the process of decaying swamp plants and remnants of past organic matter that form a fairly thick layer of peat. The characteristics of this unit are characterized by the density of peat soils with a low pH (<5), sour and relatively infertile.

Social, Economic and Cultural

The majority of tribes in the HCV study location of PT. UAI is dominated by the Mentangai Dayak tribe. Based on the results of interviews with community leaders, an overview was obtained of the ethnicity or ethnicity of the villagers who became the location of PT. UAI, i.e :

1	Sumber Alaska	:	Majority of Java tribe (65%), Banjar tribe (30%), Dayak Mentangai tribe (4%) and Sundanese tribe (1%)
2	Srimulya (F2)	:	Majority Sundanese tribe (95%) and Dayak Mentangai tribe (5%)
3	Sumber Makmur (F5)	:	Majority Banjar tribe, 5% Balinese, Java tribes and Dayak Kalteng or Dayak Pantai
4	Dadahup	:	Dayak Mentangai (95%) and migrant from Java, Banjar and Sundanese tribes (5%)

Dayak people themselves have ceremonial or ritual activities called breaking. This event is a traditional ceremony led by a demang (traditional leader) in order to ask for the safety and blessing of the almighty and ancestral spirits for the ongoing activities or for the safety of the village. In this event who have intentions / good intentions individually or in groups must prepare buffalo or pigs to be slaughtered. The head and tail of the animal must be submerged (buried) in the river or buried in the ground at the two boundaries of the land or village. For breaking the event in the context of "load or clean the village" that is asking for safety for the village is done every three years.

3.2.3. Result and Justification of the Result

Based on the results of the High Conservation Value (HCV) assessment in the PT UAI permit area, there were 6 (six) HCV categories identified in the area, namely HCV 1 (HCV Sub-categories 1.1, HCV 1.2, HCV 1.3 and HCV 1.4), HCV categories 2 (HCV 2.1, HCV 2.3), HCV 3 categories, HCV 4 categories (HCV 4.1), HCV 5 categories and HCV 6 categories, as presented in Table 10.

Table 10. Summary of HCV Assessment Findings in PT UAI Location Permit Area

HCV	Defination	Existance		
		Present	Potential	Absent
1	**Concentrations of biological diversity including endemic species, and rare, threatened or endangered (RTE) species that are significant at global, regional or national levels.**			
1.1	Areas that contain or provide support functions for biodiversity protection and / or conservation areas			
1.2	Critically Endangered Species			
1.3	Areas that Contain Habitat for Viable Populations of Endangered, Restricted Range or Protected Species			
1.4	**Areas that Contain Habitat of Temporary Use by Species or Congregations of Species**			
2	**Large landscape-level ecosystems and ecosystem mosaics that are significant at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.**			
2.1	Large natural landscapes with capacity to maintain natural ecological processes and dynamics			

HCV	Defination	Existance		
		Present	Potential	Absent
2.2	Areas that contain two or more contiguous ecosystems			
2.3	Areas that contain representative populations of most naturally occurring species			
3	**Rare, threatened, or endangered ecosystems, habitats or refugia.**			
4	**Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes.**			
4.1	Areas or ecosystems important for the provision of water and prevention of floods for downstream communities			
4.2	Areas important for the prevention of erosion and sedimentation			
4.3	Areas that function as natural barriers to the spread of forest or ground fire			
5	**Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for livelihoods, health, nutrition, water), identified through engagement with these communities or indigenous peoples.**			
6	**Sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples.**			

3.2.4. HCV and HCV Deliniation

Based on the results of the High Conservation Value (HCV) assessment in the PT UAI permit area, there were 6 (six) HCV categories identified in the area, namely HCV 1 (HCV Sub-categories 1.1, HCV 1.2, HCV 1.3 and HCV 1.4), HCV categories 2 (HCV 21, HCV 2.3), HCV 3 categories, HCV 4 categories (HCV 4.1), HCV 5 categories and HCV 6 categories.

The total area of HCV in PT. UAI covering an area of 6,723.55 Ha or as much as 100.00% of the total area of the company (6,723.55 Ha). Of the total area, it is divided into: No GO Areas that are 573.62 Ha and Go Areas that are 6,149.93 Ha, as presented in Table 20. HCV areas designated as conservation areas (no go areas) covering an area of 573.62 hectares are areas determined

based on laws and regulations and areas that specifically have natural vegetation land cover and areas that play a role in supporting threatened species.

Table 11. HCV's Area Distribution and HCV Management Area in the Permit Area of PT. UAI

HCV Areas Inside Permit Area	HCV Sub categories	HCVA	HCVMA
River Border			
Blusoh River Border	1.1, 1.3, 1.4, 2.1, 2.3, 3, 4.1, 5	1.42	
Keladan River Border	1.1, 1.2, 1.3, 1.4, 2.1, 2.3, 3, 4.1, 5	7.85	
Sengkulit River Border	1.1, 1.3, 1.4, 2.1, 2.3, 3, 4.1, 5	0.96	
Gempa River Border	1.1, 1.2, 1.3, 1.4, 2.1, 2.3, 3, 4.1, 5	1.05	
Pusa River Border	1.1, 1.3, 1.4, 2.1, 2.3, 3, 4.1, 5	4.78	
Bulan River Border	1.1, 2.1, 3, 4.1, 5	0.70	
Patua River Border	1.1, 2.1, 3, 4.1, 5	1.73	
Handel Begantung River Border	1.1, 2.1, 3, 4.1, 5	1.10	
Dadahup River Border	1.1, 2.1, 3, 4.1, 5	1.66	
Total River Border		**21.25**	
Cannals Border			
PLG-Pelingko Cannal	1.1, 1.3, 1.4, 2.1, 2.3, 3, 4.1, 6	12.70	
PLG-Rigai Cannal	1.1, 1.3, 1.4, 2.1, 2.3, 3, 4.1	9.98	
PLG-Lunuk Cannal	1.1, 1.3, 2.1, 2.3, 3, 4.1	17.01	
Total Cannal Borders		**39.69**	
Permanent Swamps			
Pelingko-Permanent Swamp	1.3, 1.4, 2.1, 2.3, 3, 4.1	10.21	
Gampa Permanent Swamp	1.3, 1.4, 2.1, 2.3, 3, 4.1, 5	3.40	
Total Permanent Swamps		**13.61**	
Biodiversity Important Areas			
Areal Perlindungan Flora dan Fauna	1.1, 1.2, 1.3, 1.4, 3, 2.3	3.48	
Daerah sebaran Orang utan	1.2, 1.3, 1.4, 2.1, 2.3, 3	495.59	
Total Biodiversity Important Areas		**499.07**	
Total No go		**573.62**	**6,723.55**
KHG (Go Areas)	**1.1, 2.1, 3, 4.1**	**6,149.93**	
Total Hectares		**6,723.55**	

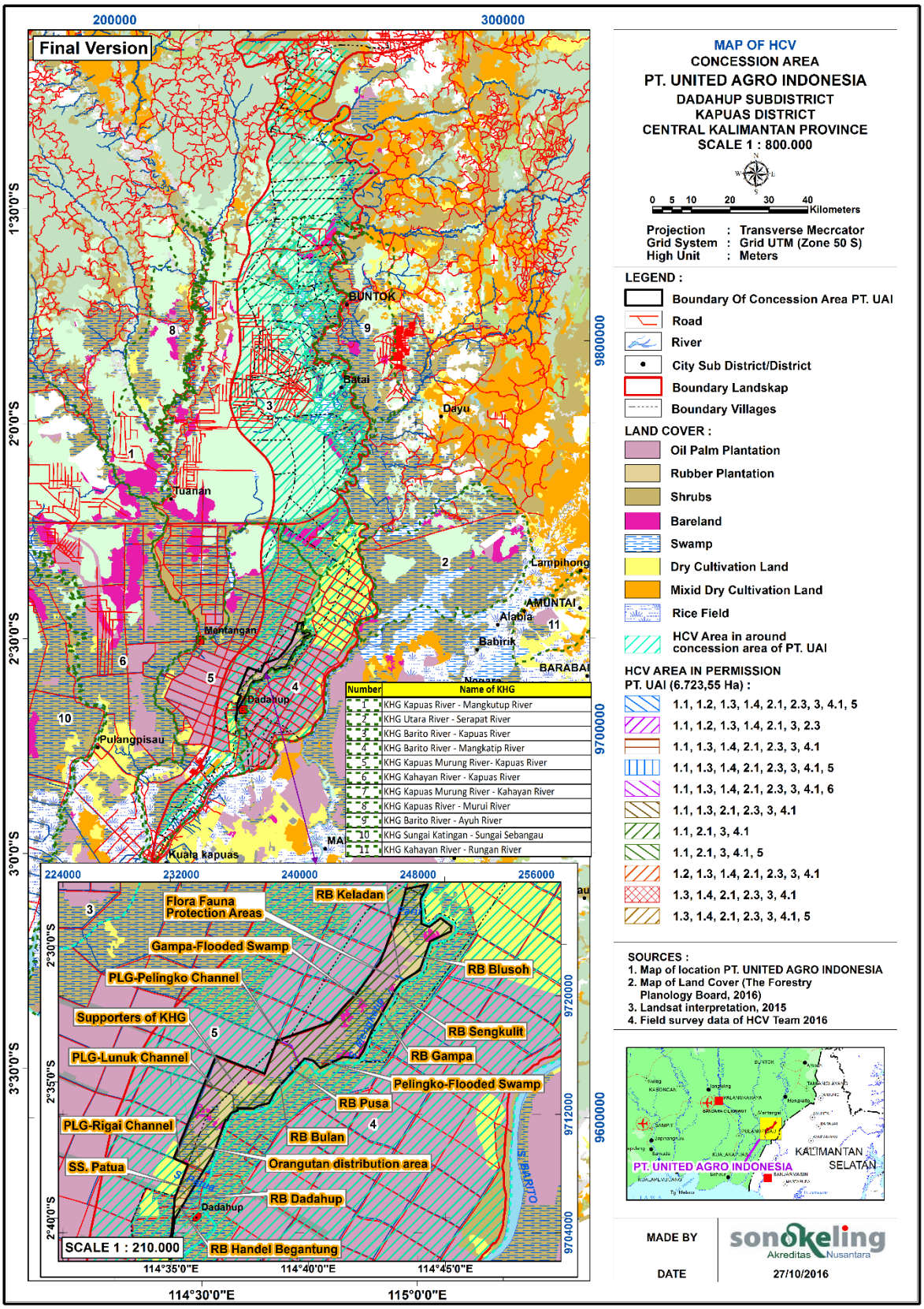


Figure 16. Map of All HCV's Distribution Area in the Permit Area of PT UAI

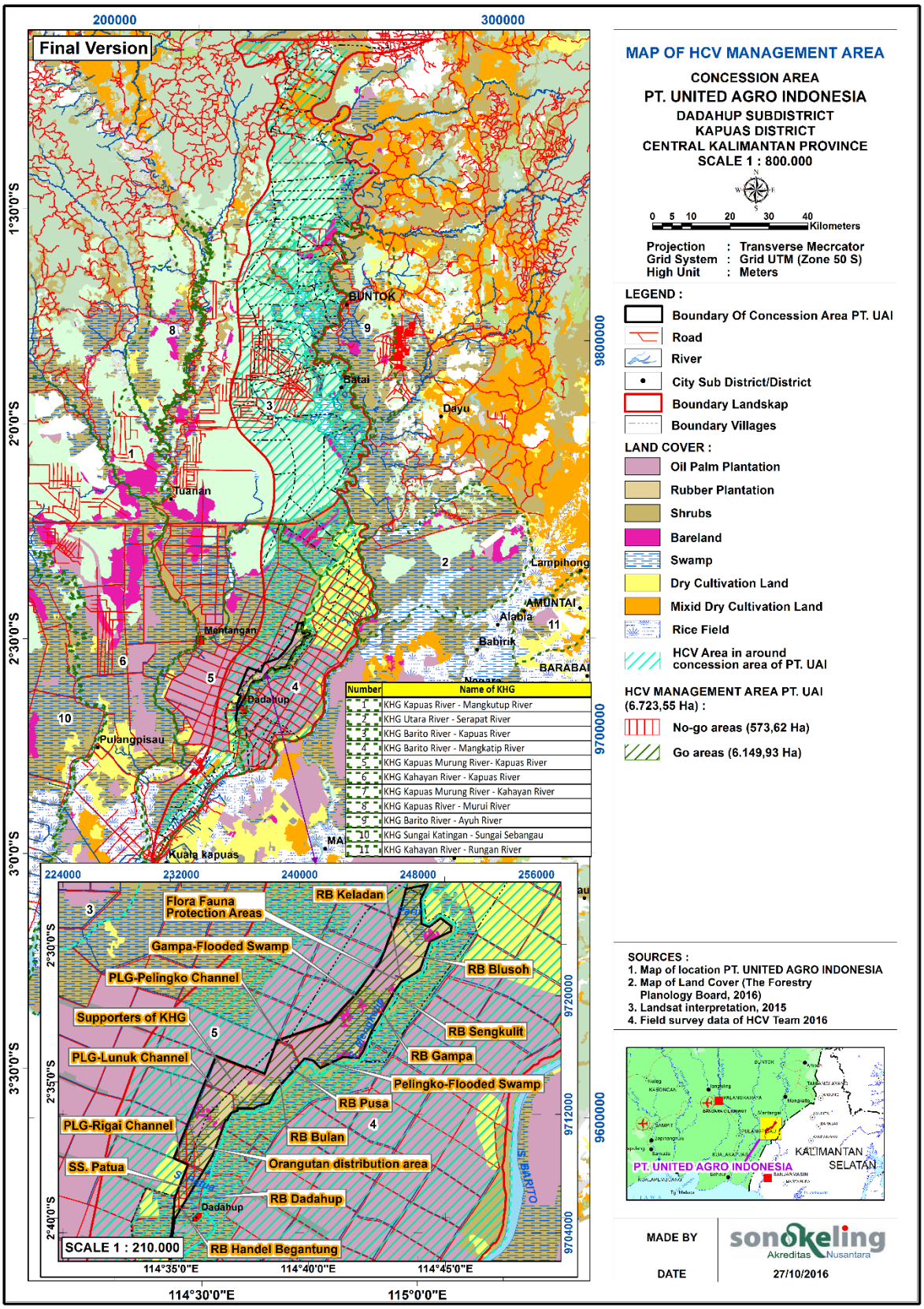
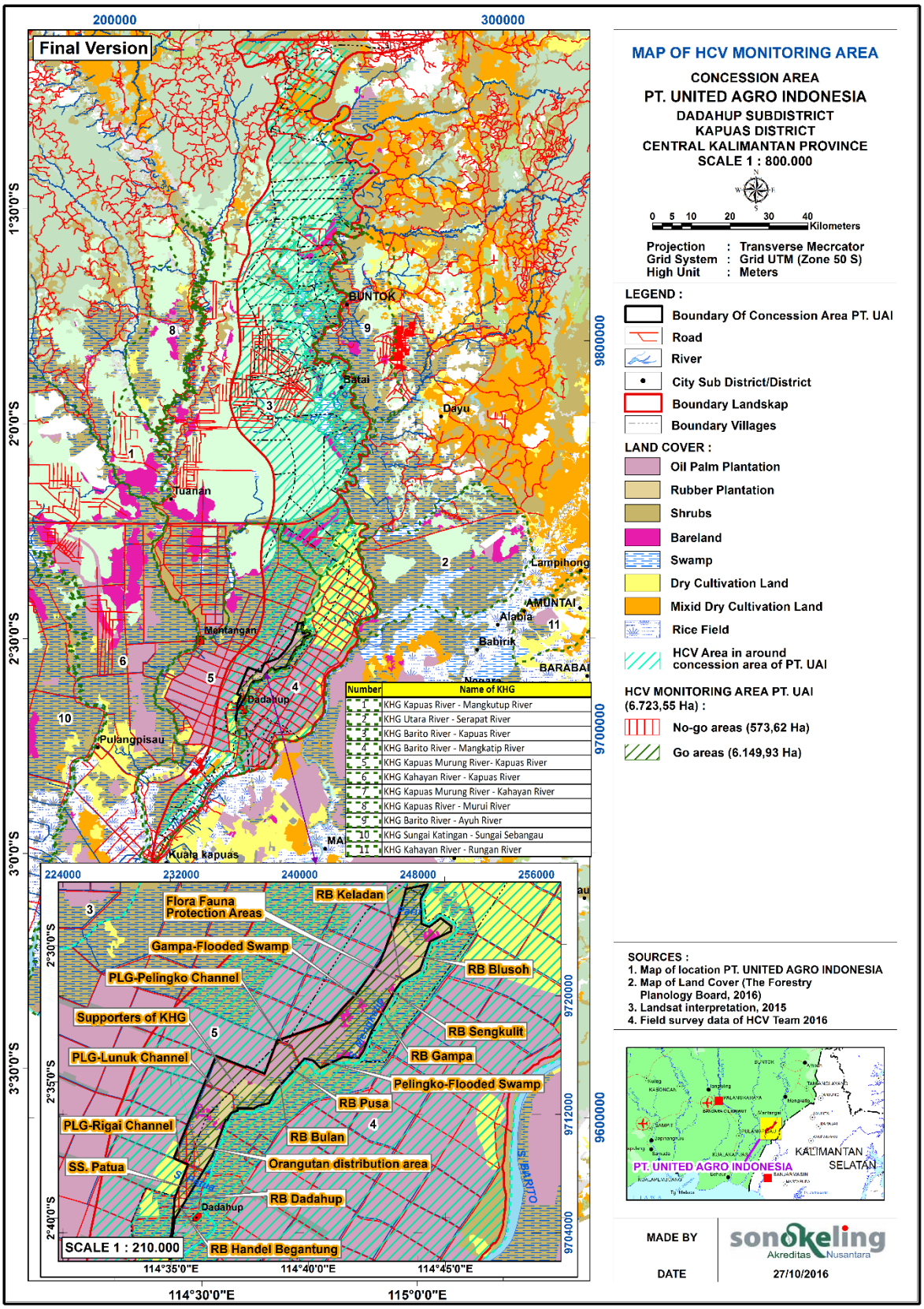


Figure 17. Map of HCV Management Area In The Permit Area of UAI



Map 18. Map of HCV Monitoring Area In the Permit Area of PT UAI

Interpretation of the findings that led to decisions on HCV presence/absence. It is key that all decisions on HCV presence/absence are adequately justified and supported by evidence

HCV 1. Species Diversity

HCV 1.1. Areas that contain or provide support functions for biodiversity protection and / or conservation areas

HCV 1.1 is the existence of areas established for the purpose of biodiversity conservation, both those located within or adjacent to the study area.

1. Presence of Protected Areas and / or Conservation Areas

Based on the results of the desktop and checking in the field, within the permit area of PT. UAI found no conservation areas, protected forests, EBA areas and IBA areas that overlap or directly border with PT. UAI The closest conservation area is Sebangau National Park (TN) which is about 59.9 km to the west of the PT. UAI; The closest Protected Forest (HL) is *Perlindungan Lahan Gambut* (PLG) Protected Forest which is about 4.59 km to the west; The Peat Hydrology Unit (KHG) was found in and around the study area; the nearest EBA region is located in the southeast and is about 90.20 km; and the nearest IBA region is located in the southwest and around 59.31 km.

2. The Presence of Protected Areas in the UAI Permit Area

The protected area inside the permit area of PT. UAI covering an area of 78.03 Ha, covering: River Border / Canal (SS / SK) covering an area of 60.94 Ha, Swamps covering an area of 13.61 Ha and a Protecting Area of Flora and Fauna covering an area of 3.48 Ha.

3. Peat Hydrological Area (KHG)

PT UAI's location permit area is directly adjacent to the Peat Hydrological Area (KHG), which is a peat ecosystem located between 2 (two) rivers, and / or between rivers and the sea, and / or in a puddle, or in a swamp. This area has an important function as a water regulator (water regulator) that supplies water flow to the rivers that are around it. Based on Government Regulation No. 71 of 2014 which was updated by Government Regulation No. 56 of 2016, concerning Protection and Management of Peat Ecosystems, that the Peat Hydrology Area (KHG) is a peat dome that functions as a water regulator and is designated as a protection function. PT UAI's location permit area is an integrated peatland forest ecosystem and provides a supporting function for the Peat Hydrology Area which plays an important role in protecting water systems in the context of the peatland ecosystem landscape. The dynamics of the flow of environmental services provided by peat ecosystems are below the surface of the land, so the analysis of the linkages between ecosystems cannot be analyzed through land surface analysis. Referring to the existing laws and regulations, the KHG area contained in the PT UAI location permit area is an area that has a protection function, thus it can be designated as HCV 1.1.

4. Rivers / Cannals Border

Within the permit area of PT. UAI found 12 rivers / canals and their banks, with a total area of 60.94 hectares of river / canals. Land cover in the river / canal area in the PT. UAI can be divided into 6 (six) types, namely oil palm plantations, mixed rubber plantations, old shrubs, shrubs, swamps and open land. Referring to Presidential Decree Number 32 of 1990, the river / canal border is a local protected area designed to protect its ecological function, so that the river / canal border, are an local protected area designed to protect its ecological function. The rivers / canals border in the area of PT UAI's permit is determined as HCV 1.1.

5. Wildlife Corridor

The existence of these rivers can also play a role as a biodiversity corridor that is a linear landscape that functions as a link between natural areas and habitats that were once connected and useful

to facilitate movement between the two. Therefore the permit area of PT. UAI found a wildlife corridor.

Related with the justification above it can be concluded that in and around the concession area of PT. UAI found HCV 1.1. The total HCV area 1.1 is within the PT. UAI covering an area of 6,224.48 ha. as presented in Table 9, while the map of HCV area distribution 1.1 within the permit area of PT. UAI and its surroundings (landscape boundaries) are presented in **Figure 19.**

Tabel 9. Distribution of the HCV Area 1.1. in the permit area of PT. UAI

No	HCV Area 1.1	Ha
A.	**Rivers/Cannals and it's border**	
1	Blusoh River	1,42
2	Keladan River	7,85
3	Sengkulit River	0,96
4	Gampa River	1,05
5	Pusa River	4,78
6	Bulan River	0,70
7	Patua River	1,73
8	Handel Begantung River	1,10
9	Dadahup River	1,66
10	PLG-Pelingko Cannal	12,70
11	PLG-Rigai Cannal	9,98
12	PLG-Lunuk Cannal	17,01
	Total A	**60,94**
B.	**Swamps**	
1	Permanent Swamp-Pelingko	10,21
2	Permanent Swanp-Gampa	3,40
	Total B	**13,61**
C.	**Peat Hidrologycal Area (*Kawasan Hidrologi Gambut-KHG*)**	
1	Peat Hidrologycal Area (*KHG*) *Sungai Kapuas Murung - Sungai Kapuas*	6.149,93
	Total C	**6.149,93**
Total (A+B+C)		**6.224,48**

HCV 1.2. Critically endangered species

1. Flora / Vegetation

Based on the results of secondary data analysis and observations in the permit area of PT. UAI found as many as 114 species of flora / plants that can be grouped into 55 families. Of these, found one species of plants that are included in the category of CR / *Critically Endangered (critical)* according to IUCN, namely *Belangeran* (*Shorea Belangeran* (Korth.) Burck.) found in Keladan River Border, Gampa River Border and Flora and Fauna Protection Areas.

2. Fauna/Wildlife

Species of diversity of wildlife found in the permit area of PT. UAI as many as 53 species of wildlife that can be grouped into 35 families, with details: as many as 10 species of mammals and 7 families, as many as 41 species of birds and 26 families, and as many as 2 species of reptiles and 2 families. For amphibians not found in the region. This is probably due to the fact that the area had experienced a fire in 2015. Of these, one species of wildlife was found that was included in the CR / *Critically Endangered* (*critical*) category according to IUCN, namely *Orang Utan (Pongo pygmaeus*). There were 53 species found in the area that were included in the IUCN Red List. Of these, there are 2 types of wildlife that are included in the CR / *Critically Endangered (critical)* category according to IUCN potentially found in the region. The existence of pangolins in the area

was obtained from the overlapping results between the map of the PT. UAI with map of the distribution of pangolins (*Manis javanica*) (IUCN, 2016). Therefore, by using the precautionary principle, pangolins potentially present in the area of PT. UAI, so that in that area potentially HCV 1.2 is found. Judging from its habitat, pangolins prefer habitats in the form of primary and secondary forests because in it there are large and old-age trees with a basin that is suitable for sleeping and for use as their habitat, as well as lower human activity. Therefore the location in the permit area of PT. UAI which has the potential to be found pangolin is shrub. Determination of HCV1.2 related to Pangolin (*Manis javanica*) is based on the existence of natural land cover in the form of shrubs.

Although based on field observations and interviews with the community, it shows that in the permit area of PT. UAI did not find the presence of *orangutan*s, but based on the results of overlapping between maps of PT. UAI with the Map of the Distribution of *Orangutans (Pongo pygmaeus)* (Serge et al. 2016), the study area included the distribution of *Orangutans*. By using the precautionary principle, orangutans have the potential to be present in the area of PT. UAI Based on its wildlife status according to IUCN, the species is categorized as CR / *Critically Endangered (critical)* according to IUCN, so that potential HCV 1.2 is found in the area. Therefore the location in the permit area of PT. UAI that has the potential to be found in *Orangutans* is the *Orangutan* Distribution Area in the study area. Determination of HCV 1.2 related to orangutans is based on the existence of areas in the area that are included in the *orangutan* distribution area.

3. Flora and Fauna Protection Areas

The area of flora and fauna protection is 3.48 ha in the permit area of PT. UAI is an area which is found in many species of *Belangeran* (*Shorea balangeran (Korth.) Burck*.) Which are categorized as CR / Critically Endangered (critical) according to IUCN. Besides that, the area is connected to the border of the *Mengkatip* River by the *Keladan* River border, where it is in the *Mengkatip* river border around the permit area of PT. UAI found an *orangutan* (*Pongo pygmaeus*). Therefore, the protected area of flora and fauna is potentially found one endemic species of the island of Borneo, the Orang Utan (*Pongo pygmaeus*), so that it is designated as an HCV1.2 area.

Based on the description it can be concluded that in the area of PT. UAI there are types of flora (plants) and fauna (wildlife) belonging to the CR / *Critically Endangered (critical)* category according to IUCN. Therefore, in and around the area HCV 1.2 (potential or present) was found. The total HCV area 1.2 in the PT. UAI covering an area of 507.97 ha as presented in ***Table 11***, while the location distribution is presented in ***Figure 20.***

Table 10. Distribution of HCV Area 1.2. in the Permit Area of PT. UAI

No	HCV Area 1.2	Ha
A.	**River and It's border**	
1	Keladan River	7,85
2	Gampa River	1,05
	Total A	**8,90**
B.	**Area of Protection of Flora-Fauna**	
1	Area of Protection of Flora-Fauna	3,48
	Total B	**3,48**
C.	**Orang Utan's distribution area**	
1	Orang utan distribution area*)	495,59
	Total C	**495,59**
Total (A+B+C)		**507,97**

Note : *) : HCV 1.2 potential

HCV 1.3. Areas that contain habitat for viable populations of endangered, restricted range or protected species

The presence of HCV 1.3 is characterized by the presence of threatened flora and fauna species, limited (endemic) distribution, and / or protection. Species that need to be considered in HCV 1.3 include all species identified in HCV 1.2 Endangered species plus other species that are considered endangered, vulnerable, limited distribution (on an island or part of it) or protected by the Government of Indonesia (protected species).

1. Flora / Vegetation

The number of plant species found in the permit area of PT. UAI as many as 114 species that can be grouped into 55 families. Based on its protection status, in the area of PT. UAI found no protected plant species according to PP No. 7 of 1999; however, in this area one plant species was found in the CITES Appendix II List, namely *anggrek ungu* (*Bulbophyllum* sp.) found in Blusoh river border and Keladan river border. There were 5 species of plants in the area that were included in the IUCN Red List, with details: 6 species included in the LC / *Least Concern* (low risk) category and 1 plant included in the CR / *Critically Endangered (critical)* category.

2. Fauna/Wildlife

Wildlife species diversity found in the permit area of PT. UAI as many as 53 species of wildlife that can be grouped into 35 families, with details: as many as 10 species of mammals and 7 families, as many as 41 species of birds and 26 families and reptiles as many as 2 types and 2 families. For amphibians not found in the region. This is probably due to the fact that the area experienced a fire in 2015. Based on its protection status, the types of wildlife encountered in the permit area of PT. UAI including endemic as many as 2 types; including protected according to PP No. 7 of 1999 as many as 14 species (as many as 4 species of mammals and as many as 10 species of birds); included in the CITES list of 15 species, with details: Appendix I for 3 species (mammals), Appendix II for 11 species (mammals for 4 species, birds for 5 species and reptiles for 2 types), and Appendix III for 1 species (mammals)); while the wildlife included in the IUCN Red List are 53 species, with details: including the LC / Least Concern (low risk) category of 45 species (5 mammals, 38 species and 2 reptiles), NT / Near Threatened (almost threatened) 2 types (1 species of mammals and 1 type of birds), 3 types of VU / Vulnerable (vulnerable) (2 species of mammals and 1 type of bird), EN / Endangered (2 species) 1 species and 1 species of birds), and CR / *Critically Endangered (critical)* 1 species (mammals). As described in HCV1.2, in the area of PT. UAI has the potential to find an *orang-utan* (*Pongo pygmaeus*), which is an *orang-utan* distribution area found within the permit area. Based on its wildlife status, *orangutans* are endemic to Kalimantan, including protected under PP. 7 of 1999, included in the CITES Appendix I List and / or included in the CR / *Critically Endangered (critical)* category according to IUCN.

3. Habitat Conditions for Protected and / or Rare Species

Based on the description above, in the area of PT. UAI found plant species that are threatened. Besides that, in the region also found wildlife species which are endemic (limited distribution), protected and / or threatened. Endangered plant species in the region are found directly; whereas for wildlife which is endemic (limited distribution), protected and / or threatened, it is obtained from direct observation in the field, interviews with the community, and literature studies. Although some wildlife data are obtained from interviews and literature studies, but by using the precautionary principle, the wildlife is considered to be potentially present in the region. Of the 16 wildlife species which are endemic (limited distribution), protected, and / or threatened found in the permit area of PT. UAI, as a whole is also found at the landscape level, namely Sebangau National Park and / or Orangutan distribution areas found in the vicinity. The sixteen species include: (1) mammals: *monyet ekor panjang* (*Macaca fascicularis*), *Bekantan kelabu* (*Nasalis larvatus*), *Orang-utan / mawas* (*Pongo pygmaeus*), and *Lutung kelabu* (*Presbytis cristata*); (2) Birds: *Enggang jambul (Aceros comatus)*, *Burung-madu sepah-raja (Aethopyga siparaja)*, *Burungmadu kelapa (Anthreptes malacensis)*, *Burung-madu belukar (Anthreptes singalensis), Burungmadu sriganti*

(Nectarinia jugularis), Elang tikus (Elanus males caeruleus), Alap-alap macan (Falco severus), Elnag ikan kepala kerbau (Ichthyophaga ichthyaetus), Pekakak emas (Pelargopsis capensis), Kipasan belang (Rhipidura javanica), and Serindit melayu (Loriculus galgulus); and (3) reptiles: water monitor lizards (*Varanus salvator*).

In the area of PT. UAI there are areas that overlap with the orangutan distribution area. The area can potentially function as a pathway for local movement of animals from the *Orangutan* Distribution Area to the study area or vice versa in the search for food with seasonal availability. *Orangutan* distribution area that overlaps with the permit area of PT. UAI covers an area of 495.59 ha, although the habitat has been converted into oil palm plantations, rubber plantations, mixed gardens, shrubs, open land, and settlements. Therefore, the development of oil palm plantations in the area will not have an impact on the distribution area of orangutans whose areas have been converted to oil palm and mixed plantations.

4. Minimum Viable Population

Based on the observations of wildlife on a length of 200-500 meters along with a width of 100 meters, and assuming that at each observation site found one individual, the estimated abundance of wildlife species that are endemic (limited distribution), protected, and / or threatened found in the permit area of PT. UAI ranges from 1-5 individuals / ha. Referring to Franklin (1980), the abundance of wildlife including endemic (limited distribution), protected, and / or including Appendix I or II CITES and / or included in the CR / Critically Endangered (critical) category according to IUCN does not meet the minimum sustainable population size (minimum viable population); but at the landscape level it meets the minimum viable population size. Permit area of PT. UAI there are shrubs that have the potential as an area for temporary stops or places to look for food, especially for birds. Therefore the area within the permit area of PT. UAI which has land cover in the form of shrubs has a function to support MVP (Minimum Viable Population) at the landscape level, namely as a temporary stopover or foraging.

Based on the description above it can be concluded that in and around the permit area of PT. UAI found HCV 1.3 (existing or potential). The total HCV area is 1.3 within the PT. UAI covering an area of 568.43 ha as presented in ***Table 11***; while the distribution of HCV 1.3 of PT. The UAI is presented in ***Figure 21***.

Table 11. Distribution of HCV Area 1.3 in the Permit Area of PT. UAI

No	HCV Area 1.3	Ha
A.	**Rivers/Cannals and It's borders**	
1	Blusoh River	1,42
2	Keladan River	7,85
3	Sengkulit River	0,96
4	Gampa River	1,05
5	Pusa River	4,78
6	PLG-Pelingko Cannal	12,70
7	PLG-Rigai Cannal	9,98
8	PLG-Lunuk Cannal	17,01
	Total A	**55,75**
B.	**Swamps**	
1	Permanent swamp-Pelingko	10,21
2	Permanent swamp-Gampa	3,40
	Total B	**13,61**
C.	**Area of Protection of Flora and Fauna**	
1	Area of Protection of Flora and Fauna	3,48
	Total C	**3,48**
D.	**Distribution of *Orang Utan* Area**	
1	Distribution of *orang utan* area*)	495,59
	Total D	**495,59**
Total (A+B+C+D)		**568,43**

Note :*) HCV1.3 potential

HCV 1.4. Areas that contain habitat of temporary use by species or congregations of species

The purpose of HCV Assessment 1.4 is to identify key habitats in landscapes where a very large number of individual species are collected and / or use as temporary habitats. The presence of HCV 1.4 is marked by areas that function as temporary habitats, such as caves, nesting sites, foraging or resting places for migratory birds, corridors or stepping stones. In assessing the existence of rare or endangered fauna species not only in the permit area of PT. UAI, but needs to be assessed in terms of broader landscape. In this way, it is seen that some of the scrub areas in the area still have tall trees so that they can function as areas for temporary stopovers or foraging grounds. However, as explained earlier that the protected area and conservation area surrounding it are quite far from the PT. UAI, so it is not possible for the movement of wildlife especially birds from the permit area of PT. UAI to protected areas and / or conservation areas that are in the vicinity or vice versa. Besides that, in this area also not found species of birds that belong to the category of migrants who are likely to use the area temporarily as part of their habitat (perched in a high canopy to rest, waiting for prey or foraging). Therefore in the permit area of PT. UAI there is no area determined as HCV1.4.

In the area of PT. UAI found one endemic species of Borneo Island, namely *Orang utan (Pongo pygmaeus)* in Keladan river border, Gampa river border and Flora and Fauna Protection Areas, and potentially found in the *Orangutan* distribution area. In connection with this information, the *orangutan* species are found in the Keladan river border, Gampa river border and Flora and Fauna Protection Areas, and are likely to be found in *orangutan* distribution areas that overlap with the study area as a local movement path for animals from the overlapping orangutan distribution area. with the study area to the distribution of orangutans in the vicinity or vice versa in an effort to find food with seasonal availability. Despite the land cover in the Keladan river border, Gampa river border, Flora and Fauna Protection Areas as well as the *Orangutan* distribution area that overlaps with the permit area of PT. UAI is largely in the form of thickets and mixed gardens; however, with the precautionary principle HCV 1.4 has the potential to be found in the region.

4.3.2. HCV 2 Intact forest landscape, landscape-level ecosystems and mosaics

HCV 2.1. Large natural landscapes with capacity to maintain natural ecological processes and dynamics

The presence of HCV 2.1 is marked by the presence of intact forest landscapes (> 50,000 ha) and core areas of the landscape. The core area is defined as the area that is reserved to ensure that the natural ecological process can take place without interruption due to fragmentation and the effect of the opening area (edge effect). The core area is determined based on its size (> 20,000 ha) plus the buffer area around it, which is at least three (3) km from the opening area. Permit area of PT. UAI is not close to intact forest landscapes. The intact forest landscape is located in the west and southwest of the permit area and the closest is about 145.20 km (www.intactforests.org). Besides that, the permit area of PT. UAI is not available and is not part of the core area, but around it is found the core area.

The core area which is located around the PT. UAI covers conservation areas (national parks), protected forests, peat Hydrology areas, EBA areas, and IBA areas. The closest conservation area is located to the west of the PT. UAI is *Sebangau* National Park which is about 59.9 km from the permit area. The condition of the *Sebangau* NP land cover is mostly secondary forest and swamp shrub, while the land cover between the PT. UAI with *Sebangau* National Park is dominated by shrubs and oil palm plantations.

PT UAI's location permit area is part of the peatland ecosystem which provides a supporting function for the Peat Hydrology Area (KHG) which plays an important role in protecting water systems in the context of the peatland ecosystem landscape. The dynamics of the flow of environmental services provided by peat ecosystems are below the surface of the soil, so the analysis of the linkages between ecosystems cannot be analyzed through land surface analysis but is determined based on the location of the peat dome (peat dome). The position of the peat dome is indicated through the indicative determination of the KHG, this is because for the determination of the KHG a detailed hydrotopographic survey is needed, to ensure variations in the depth of the peat. The approach through the indicative KHG map is one of the precautionary approaches as a form of early warning system that the management area is a protected zone in the peatland ecosystem.

Based on the KHG map showing that the PT UAI location permit area is directly adjacent to the KHG, considering that the peat ecosystem landscape dynamics occur below the surface of the land, the existence of a location permit will provide an important supporting function for KHG and the development of oil palm plantations in the PT. UAI will have an impact on KHG.

Based on the description above it can be concluded that the permit area of PT. UAI is not available and is not part of the intact forest landscape and / or core forest area in a natural condition with an area of 20,000 hectares. However, the location permit area is part of the KHG which is able to provide a supporting function for the dynamics of the flow of environmental services that occur below the surface of the land through its role as a water regulator. Therefore in the permit area of PT. UAI found HCV 2.1. HCV area 2.1. stipulated are all PT UAI location permits covering ± 6,723.55 Ha, where HCV area 2.1. overlaps with other HCVs and part of which is a cultivation area (Go area) covering 6,149.93 Ha and the other part is a conserved area (no go area) covering an area of 573.62 Ha. HCV area distribution location 2.1. in the area of PT UAI's location permit, presented in ***Figure 23*****.**

Table 13. Distribution of HCV Area 2.1. in the Permit Area PT UAI

No	HCV Area 2.1.	Luas
A.	**Rivers/Cannals and it's border**	
1	Blusoh river border	1.42
2	Keladan river border	7.85
3	Sengkulit river border	0.96
4	Gampa river border	1.05
5	Pusa river border	4.78
6	Bulan river border	0.70
7	Patua river border	1.73
8	Handel Begantung river border	1.10
9	Dadahup river border	1.66
10	PLG-Pelingko Cannal	12.70
11	PLG-Rigai Cannal	9.98
12	PLG-Lunuk Cannal	17.01
B.	**Swamps**	
13	Permanent swamp-Pelingko	10.21
14	Permanent swamp-Gampa	3.40
C.	**Flora and Fauna Protection Area**	
15	Flora and Fauna Protected Area	3.48
D.	***Orang utan* Distribution Area**	

No	HCV Area 2.1.	Luas
16	*Orang Utan* Distribution Area	495.59
E.	**Peat Hidrology Area (KHG)**	
17	Peat Hidrology Area	6,149.93
	Total Areal	**6,723.55**

HCV 2.2. Areas that contain two or more contiguous ecosystems

The existence of HCV 2.2 is characterized by a landscape that has various types of ecosystems to ensure that the core area of the ecosystem and the continuity of its boundaries are well maintained. Based on the results of GIS analysis and field surveys show that the ecosystem found in the permit area of PT. UAI in the past (prior to conversion) of one kind, namely the association between riparian forests, freshwater swamps and weeds with swamp and the KHY land system; while around the permit area of PT. UAI found as many as 9 kinds, namely associations between riparian forests, lowland forests over alluvium land, and freshwater swamps with the BKN land system; association between low-lying forest of sandstone and kerangas forest and BWN land system; peat swamps with BRH, GBT and MDW land systems; associations between riparian forests, freshwater swamps and thatch grasslands and the KHY land system; Kerangas forest with PKU land system; association between freshwater swamps and open wetlands and lakes with the PMG land system; mixed dipterocarp forest or hills above old sea sediment with PST land systems; associations between riparian forests, lowland forests over alluvium land, and freshwater swamps with SBG land systems; and low-lying sandstone forest with TWB and TWH land systems.

From the analysis of Landsat 8 satellite imagery in 2015 and the results of field checks in 2016, land cover within the permit area of PT. UAI consists of 5 types, namely oil palm plantations, mixed rubber gardens, shrubs, swamps, and open land; while around the permit area of PT. UAI consists of 14 types, namely oil palm plantations, mixed rubber plantations, shrubs, swamps, open land, water bodies, swamp shrubs, secondary dryland forests, secondary swamp forests, settlements, mining, upland agriculture, mixed upland agriculture and paddy fields.

At present, land cover in the form of secondary dry land forest is found in the association between lowland forest over sandstone and kerangas forest, while secondary swamp forest is found in peat swamp ecosystem around the permit area of PT. UAI; however secondary dryland forests and secondary swamp forests found in the two ecosystems are not interconnected. In this regard, at present in and around the area of PT. UAI found no two types of ecosystems that are interconnected with unbroken boundaries (ecoton). Because in and around the permit area of PT. UAI found no ecotone or natural transition of two (continuous) ecosystems or areas containing populations and representatives of natural species. In this regard, HCV 2.2 was not found in and around the PT. UAI.

HCV 2.3. Areas that contain representative populations of most naturally occurring species

The existence of HCV 2.3 is marked by the existence of a landscape with special potential that can maintain the survival of representative populations of species. Permit area of PT. UAI and its surroundings are flat topographical, with altitudes ranging from 9 - 34 masl and slopes ranging from 0-8%. In this regard, PT. UAI found no gradation rising from the lowlands to the mountainous ecosystem. From the results of field observations (interviews and field surveys) show that in the permit area of PT. UAI found species of animals including high-level predators, namely *Elang tikus (Elanus caeruleus)* and *Elang ikan kepala kerbau (Ichthyophaga ichthyaetus)*; however, in this area there are no core areas or buffer zones for important landscapes, where the explanation is as described in the HCV 2.1 discussion.

Based on the overlay of the Orang Utan Distribution Map according to IUCN 2016 version 3 with the map of the PT. UAI, a part of PT. UAI is included in the distribution of orangutans; but based on the results of interviews with communities in the villages around the PT. The UAI and the results of checking in the field, in the orangutan distribution area, there were no orangutans found. This is probably due to the fact that the land cover in the permit area is mostly in the form of swamps and mixed gardens. Therefore it can be concluded that in the orangutan distribution area in the permit area of PT. UAI did not find any species of global concern, namely *Orang Utans (Pongo pygmaeus).*

However, based on field observations, in the Keladan river border, Gampa river border and Flora and Fauna Protection Areas, *orangutans* were found. Therefore it can be concluded that in the Keladan river border, Gampa river border and Flora and Fauna Protection Areas within the permit area of PT. UAI found that there is a species of global concern, namely *Orang Utans (Pongo pygmaeus)*. Thus HCV2.3 was found in the region. The total HCV area 2.3 in the PT. UAI covering an area of 568.43 ha as presented in ***Table 13***, while the distribution is presented in ***Figure 24.***

Table 13. Distribution of HCV Area 2.3 in the Permit Area of PT. UAI

No	HCV Area 2.3	Ha
A.	**Rivers/Cannals and it's border**	
1	Blusoh river border	1.42
2	Keladan river border	7.85
3	Sengkulit river border	0.96
4	Gampa river border	1.05
5	Pusa river border	4.75
6	PLG-Pelingko Cannal	12.70
7	PLG-Rigai Cannal	9.98
	Total A	**55.72**
B.	**Swamps**	
1	Permanent swamp-Pelingko	10.21
2	Permanent swamp-Gampa	3.40
	Total B	**13.61**
C.	**Flora and Fauna Protection Area**	
1	Flora and Fauna Protection Area	3.48
	Total C	**3.48**
D.	***Orang Utan* distribution areas**	
1	*Orang utan* distribution areas*)	495.59
	Total D	**495.59**
Total (A+B+C+D)		**568.43**

Note :*) : HCV2.3 potential

4.3.3. HCV 3. Ecosystem and habitat

The presence of HCV 3 is characterized by: (1) The existence of threatened ecosystems, namely (a) In an bio-physiogeographic unit an ecosystem has lost 50% or more of its original area or (b) In a bio-physiogeographic unit there is an ecosystem that will experience losing 75% or more of the original area based on the assumption that all conversion areas in the spatial structure can be converted; and (2) Existence of rare ecosystems: having natural or human natural ecosystem factors that cover less than 5% of the total area of a bio-physiographic unit. In the area of PT. UAI and landscape boundary assessment there are no naturally rare ecosystems because there are

no limestone karst forests, inselberg, montana forests, or river forests in the barren zone; and there is no anthropogenic rare ecosystem because no grassland is found in fertile soils that naturally experience seasonal flooding or fragments of primary forests that have been eliminated. The above mentioned ecosystems were not found because the PT UAI location permit area and the boundary assessment landscape are peat swamp forest ecosystems and wetlands, which are characteristic of Kalimantan lowland forests with elevations of 0 - 500 m.

In the past (before there was a conversion) in the area of the location permit and landscape assessment there were 9 (nine) types, namely 1). associations between riparian forests, freshwater swamps, and thatch grasslands; 2) associations between riparian forests, lowland forests over alluvium soils, and freshwater swamps; 3) association between low-lying forest of sandstone and kerangas forest; 4) peat swamps; 5) associations between riparian forests, freshwater swamps and grasslands swamp; kerangas forest; 6) association between freshwater swamps and open wetlands and lakes; 7) mixed Dipterocarpaceae forest or hills above old sea sediments; 8) associations between riparian forests, lowland forests over alluvium lands and freshwater swamps; and 9) lowland forests above pasi. The status of peat swamp ecosystem based on the precautionary approach is classified as endangered.

In clarifying threatened and / or endangered ecosystems in and around PT. UAI uses a precautionary approach (Precautionary Approach), that in the area of PT UAI's permit location and landscape boundary assessment there is a peatland ecosystem and is a unified landscape of the same. Based on the description above, it can be concluded that in the area of PT. UAI found HCV 3 as presented in ***Table 14***. and HCV distribution are presented in ***Figure 25.***

Table 14. Distribution of HCV Area 3 in the Permit Area of PT UAI

No	HCVA 3	HA
A.	**Forested Areas**	
1	Secondary forest	0
B.	**Peat Swamp**	
2	Peat ecossystem supporting Peat Hydrology Area	6,723.55
	Total A	**6,723.55**

4.3.4. HCV 4 Ecosystem service

HCV 4.1. Areas or ecosystems important for the provision of water and prevention of floods for downstream communities

Permit area of PT. UAI is in the upstream part of the Barito Hulu Sub Watershed, Barito Watershed. The type of land cover of this area is based on the analysis of Landsat Image 8 OLI Path / Row 118/62 Coverage of August and October 2015 and field observations show that the type of land cover in the permit area of PT. UAI consists of 5 types, namely oil palm plantations, mixed plantations, shrubs, swamps and open land. In the area of PT. UAI there is a swamp which some conditions in the form of a swamp area of 13.61 Ha. The area is maintained by PT. UAI because it has an important function as a water catchment area.

Secondary dry land forest and secondary swamp forest around the permit area of PT. UAI has natural vegetation with stratified canopy and there are still some trees with a diameter of 50 cm with a height of 30-40 meters. In addition there are tree habitus vegetation ranging from seedlings, saplings, poles and trees, there is also vegetation with bush habitus. Forest conditions such as these have an important role in the hydrological cycle, namely increased interception and infiltration, thereby reducing surface runoff. As a consequence groundwater increases and erosion can be controlled.

Most of the PT. UAI has a flat topography. There are many grooves in the lower part that drain infiltration water. Water from the furrows then flows into rivers. There were 9 rivers / creeks and 3 canals, with widths of rivers / canals ranging from 1-12 meters. The length of the river / canal section within the permit area of PT. UAI ranges from 0.05 - 3.13 km. The rivers / canals are Blusoh river, Keladan river, Sengkulit river, Gampa river, Pusa river, Bulan river, Patua river, Handel Begantung river, Dadahup river, PLG-Pelingko Canal , PLG-Rigai Canal and PLG-Nunuk Canal. All of the rivers / canals boils down to Mangkatip river.

Based on the results of map analysis and field observations it is known that in the permit area of PT. UAI found riparians, freshwater swamps, and grass weeds and also peat swamps. These ecosystems are part of the Wetlands (Wetlands) which plays an important role in storing water and controlling flooding for downstream areas. Significant changes to the wetlands, for example through drainage, will affect flooding in downstream areas. Therefore, in the area of PT UAI, HCV 4.1 area was found. The total HCV 4.1 area within the PT. UAI covering an area of 6,723.55 ha as presented in ***Table 15.*** Map of the distribution of HCV4.1 in and around PT. The UAI is presented in ***Figure 26.***

Table 15. Distribution of HCV Area 4.1 in the Permit Area PT. UAI

No.	HCV Area 4.1	Ha
A.	**Rivers/Cannals and it's border**	
1	Blusoh river border	1.42
2	Keladan river border	7.85
3	Sengkulit river border	0.96
4	Gampa river border	1.05
5	Pusa river border	4.78
6	Bulan river border	0.70
7	Patua river border	1.73
8	Handel Begantung river border	1.10
9	Dadahup river border	1.66
10	PLG-Pelingko Cannal	12.70
11	PLG-Rigai Cannal	9.98
12	PLG-Lunuk Cannal	17.01
	Total A	**60.94**
B.	**Swamps**	
1	Permanent swamp-Pelingko	10.21
2	Permanent swamp-Gampa	3.40
	Total B	**13.61**
C.	**Peat Hidrology Area (KHG)**	
1	Peat Hidrology Area (KHG) Kapuas Murung – Kapuas rivers	6,149.93
	Total C	**6,149.93**
Total (A+B+C)		**6,723.55**

HCV 4.2. Areas important for the prevention of erosion and sedimentation

The presence of HCV 4.2 is marked by the presence of areas or ecosystems that are important for erosion and sedimentation control, namely forested or other vegetated areas that have a severe or very Heavy Erosion Hazard (TBE) potential.

Permit area of PT. UAI and surrounding areas are flat topographic, with slopes ranging from 0 - 8%. Referring to the classification as listed in the attachment to the Decree of the Minister of Agriculture No. 837 / Kpts / Um / II / 1980, the area of PT. UAI and its surroundings according to the slope can be divided into one slope class, namely Slope Class 1 (L1). The type of soil found in

the PT. UAI consists of one type of soil, Alluvial; while around the permit area of PT. UAI consists of 4 types namely Alluvial, Organosol, Podsolik and Podsol. Based on the classification as stated in the attachment to the Decree of the Minister of Agriculture No. 837 / Kpts / Um / II / 1980, the permit area of PT. UAI according to the soil aspect is composed of one class of soil namely Alluvial including T1 (not sensitive to erosion), while around it is composed of 3 types of soil namely Podsol and Podsolik including T4 (sensitive to erosion) and Organosol including T5 (very sensitive to erosion).

From the rain data obtained from the Tjilik Riwut Airport Palangkaraya Meteorological Station in 2006 - 2015 shows that the average annual rainfall in the permit area of PT. UAI and its surroundings are around 2,911.9 mm with an average annual number of rainy days around 195 rainy days with a rainfall intensity of 14.93 mm / rainy day. Referring to the classification as stated in the attachment to the Minister of Agriculture's Letter Number 837 / Kpts / Um / II / 1980, the intensity of the rain of that size is included in the Low category (I2).

Based on the calculation results, the level of potential erosion (TBE) in the permit area of PT. UAI is very low (3.67 tons / ha / year). In connection with the description above it can be concluded that in and around the area of PT. UAI not found HCV 4.2.

HCV 4.3. Areas that function as natural barriers to the spread of forest or ground fire

The existence of HCV 4.3 is marked by the existence of an area that functions as a natural barrier to prevent the spread of forest and land fires, such as: various types of natural forests that are still in good condition, peatlands that are no longer forested but hydrological systems are still functioning properly, bog , inundation areas, other wetlands and green belts.

Although in the permit area of PT. UAI found wetlands, but the condition of the vegetation is no longer good, the area is not large, the location of the spots and the shape is not in the form of a belt, so it does not function optimally as a natural barrier / firebreak. In this regard, PT. UAI found no natural ecosystems that act as natural or fire barriers. In addition, although 9 rivers and 3 PLG canals were found in the area, the rivers / canals in this area are small and most of the land cover is in the form of oil palm plantations, mixed plantations, and open land, so that small possibility to withstand the spread of fire. From the description above it can be concluded that in and around the area of PT. UAI not found HCV 4.3.

4.3.5. HCV 5. Sites and Resources that are Fundamental to Meet Basic Needs of Local people or indigenous peoples (eg for livelihoods, health, nutrition, water) identified by involvement with such community or indigenous peoples

HCV 5 are areas that have an important function as a source of livelihood for local people, especially in meeting the basic needs of the community, namely food, water, clothing / clothing, materials for houses and equipment, firewood, medicines, animal feed, and money income cash for fulfillment of subsistence labor. HCV 5 study area in the PT. UAI covers Dadahup Subdistrict which includes Sumber Alaska Village, Srimulya Village (F2), Sumber Makmur Village (F5), Dadahup Village and Tambak Bajai Village. Based on the results of the analysis of basic needs, such as food (carbohydrates, protein and fruit / vegetables), water, clothing and shelter, firewood, medicines, animal feed and cash income, is done by determining the types of needs that can be met and the level of dependence community to the concession area. The results of identification of the characteristics of fulfillment and the level of dependence of the community around the Management Unit or PT. UAI towards the fulfillment of various basic needs, the ecosystem that has an important value to fulfill the needs of protein (fish) fulfillment is Permanent swamp-Gampa, Blusoh river, Keladan river, Sengkulit river, Gampa river, Pusa river, Bulan river, Patua river, Handel Begantung river, Dadahup and Beje rivers. This is based on the fact that there are still residents who depend on the protein needs of fish from nature (rivers and beje). Based on the factors of alternative availability and sustainable use, within the permit area of PT. UAI found HCV 5. Total HCV 5 within the PT. UAI covering an area of 24.65 ha as presented in **Table 16** and the distribution of HCV 5 areas is presented in **Figure 27**.

Table 16. Distribution of HCVA 5 in the Permit Area of PT. UAI

No.	KBKT 5	Luas (ha)
A.	**Rivers/Cannals and it's border**	
1	Blusoh river border	1.42
2	Keladan river border	7.85
3	Sengkulit river border	0.96
4	Gampa river border	1.05
5	Pusa river border	4.75
6	Bulan river border	0.70
7	Patua river border	1.73
8	Handel Begantung river border	1.10
9	Dadahup river border	1.66
	Total A	**21.22**
B.	**Swamp**	
1	Permanent swamp-Gampa	3.40
	Total B	**3.40**
Total (A+B)		**24.65**

4.3.6. Sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples (HCV 6)

HCV 6 is an area that has an important function for the traditional cultural identity or typical of local communities, where the area is needed to meet their cultural needs. The relationship between the community and the region is realized by the existence of ideas, ideas, norms, values, activities and patterns of action, as well as the environment, natural resources or objects that underlie the collective behavior of community members and govern the relationship between the community and the region. The indigenous tribes in Sumber Makmur Village, Dadahup Village, and Tambak Bajai Village are Central Kalimantan Dayak, Mentangai Dayak and Pantai Dayak. The other tribes are Banjar, Bugis, Javanese, Sundanese, and so on. Kalteng Dayak, Mentangai Dayak and Dayak Pantai with the Hindu Kaharingan religion still have traditional rituals, such as traditional ceremonies (sangiyang) that are still thick is a breaking ceremony. This event is a traditional ceremony led by a demang (traditional leader) in order to ask for the safety and blessing of the almighty and ancestral spirits for the ongoing activities or for the safety of the village.

In addition, ritual activities that are still being carried out are placing offerings or offerings and malaga water (wine water) and placing a yellow flag as a sign of gratitude for the success or the fulfillment of the aspirations that he aspires to. This ritual activity, usually carried out in places that are considered sacred and usually on the edge or estuary of the river.

In the context of identifying areas that have HCV 6 in accordance with these indicators, observations, FGDs or structured interviews have been carried out, in-depth interviews involving the participation of community leaders in each village around the concession area. Information about sacred places, customs and culture and their distribution related to HCV 6 can be described as in **Table 17.**

Tabel 17. Area distribution or Distribution of Forest Resources, Both at the Landscape or Ecosystem Level, Related to Local Communities in Fulfilling Cultural Needs in the Permit Area of PT. UAI

Villages	Indicator/Sub Indicator	Presence	Quality / Wide	Importance Level	Note
Sumber Alaska	Zoning is based on certain cultural rules	Absent	-	-	-
	Archaeological site distribution	Absent	-	-	-
	Distribution of ritual activities	Absent	-	-	-
	Distribution of biological natural resources to meet cultural needs	Absent	-	-	-
Srimulya (F2)	Zoning is based on certain cultural rules	Absent	-	-	-
	Archaeological site distribution	Absent	-	-	-
	Distribution of ritual activities	Absent	-	-	-
	Distribution of biological natural resources to meet cultural needs	Absent	-	-	-
Sumber Makmur (F5)	Zoning is based on certain cultural rules	Absent	-	-	-
	Archaeological site distribution	Absent	-	-	-
	Distribution of ritual activities	Absent	-	-	-
	Distribution of biological natural resources to meet cultural needs	Presence	High	High	Pelinko PLG Canal or better known as the Simpang Lima Canal. The canal is used to put offerings and malaga water (wine). The wine can be replaced with fanta. Besides malaga water is also planted with a yellow flag.
	Zoning is based on certain cultural rules	Absent	-	-	-
Dadahup	Zoning is based on certain cultural rules	Absent	-	-	-
	Archaeological site distribution	Absent	-	-	-
	Distribution of ritual activities	Absent	-	-	-
	Distribution of biological natural resources to meet cultural needs	Absent	-	-	-
Tambak Bajai	Zoning is based on certain cultural rules	Absent	-	-	-
	Archaeological site distribution	Absent	-	-	-
	Distribution of ritual activities	Absent	-	-	-

Source : HCV Team Analysis Resut of PT. UAI, 2016

Based on the description above, it can be concluded that in the area of PT. UAI found HCV 6. Total HCV 6 area within the permit area of PT. UAI covering an area of 12.70 ha as presented in **Table 18**, while the distribution is presented in **Figure 28**.

Table 18. Dsitribution of HCV Area 6 in the Permit Area of PT. UAI

No.	HCVA 6	HA
1	Place of Offerings, Malaga Wine, and Yellow Flag Placement	0.0025*)

No.	HCVA 6	HA
Total		**0.0025**

Note : *) overlapping with canal PLG-Pelingko border.

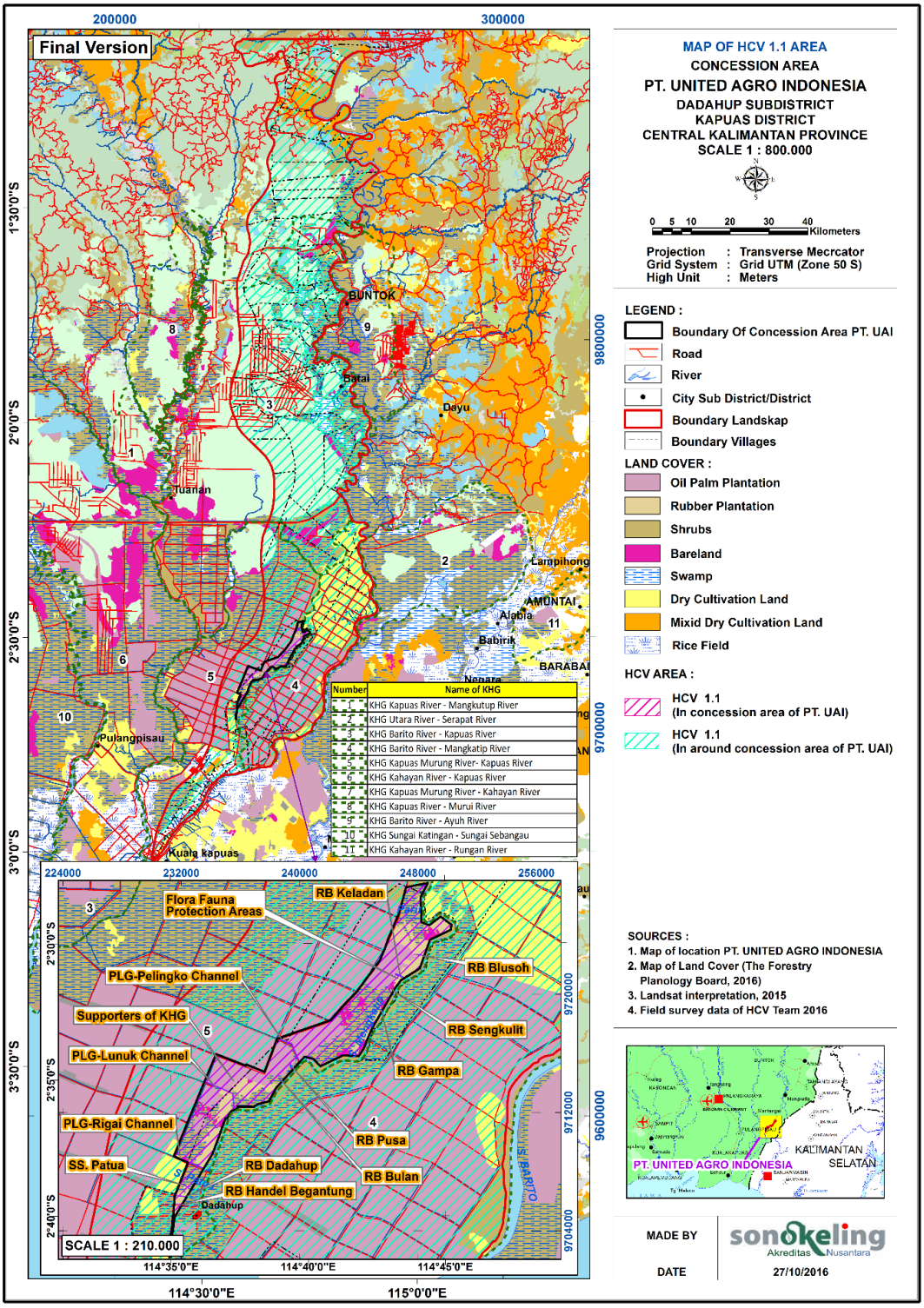


Figure 19. Map of HCV 1.1. Area Distribution in the Permit area of PT. UAI

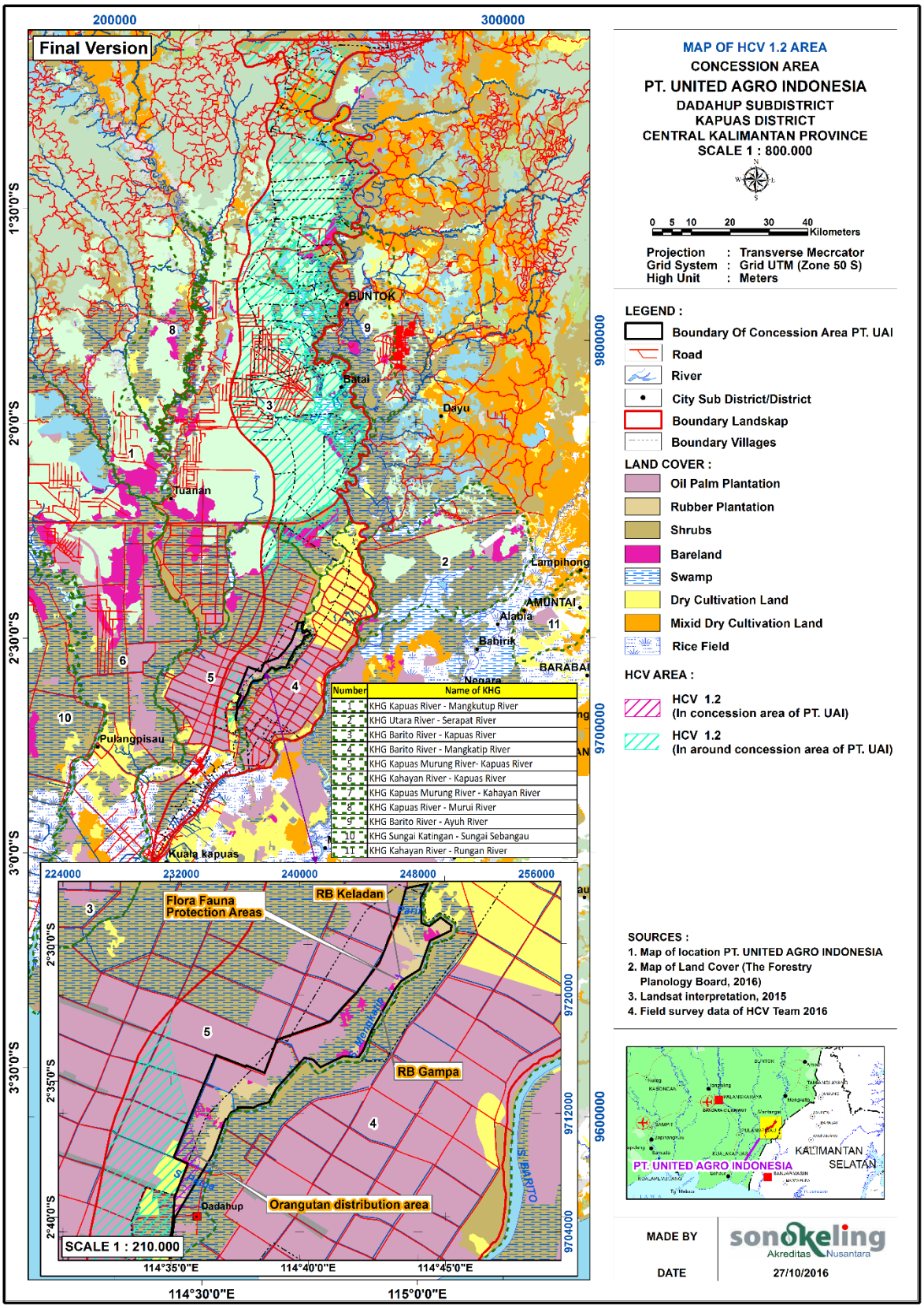


Figure 20. Map of HCV 1.2. Area Distribution in the Permit area of PT. UAI

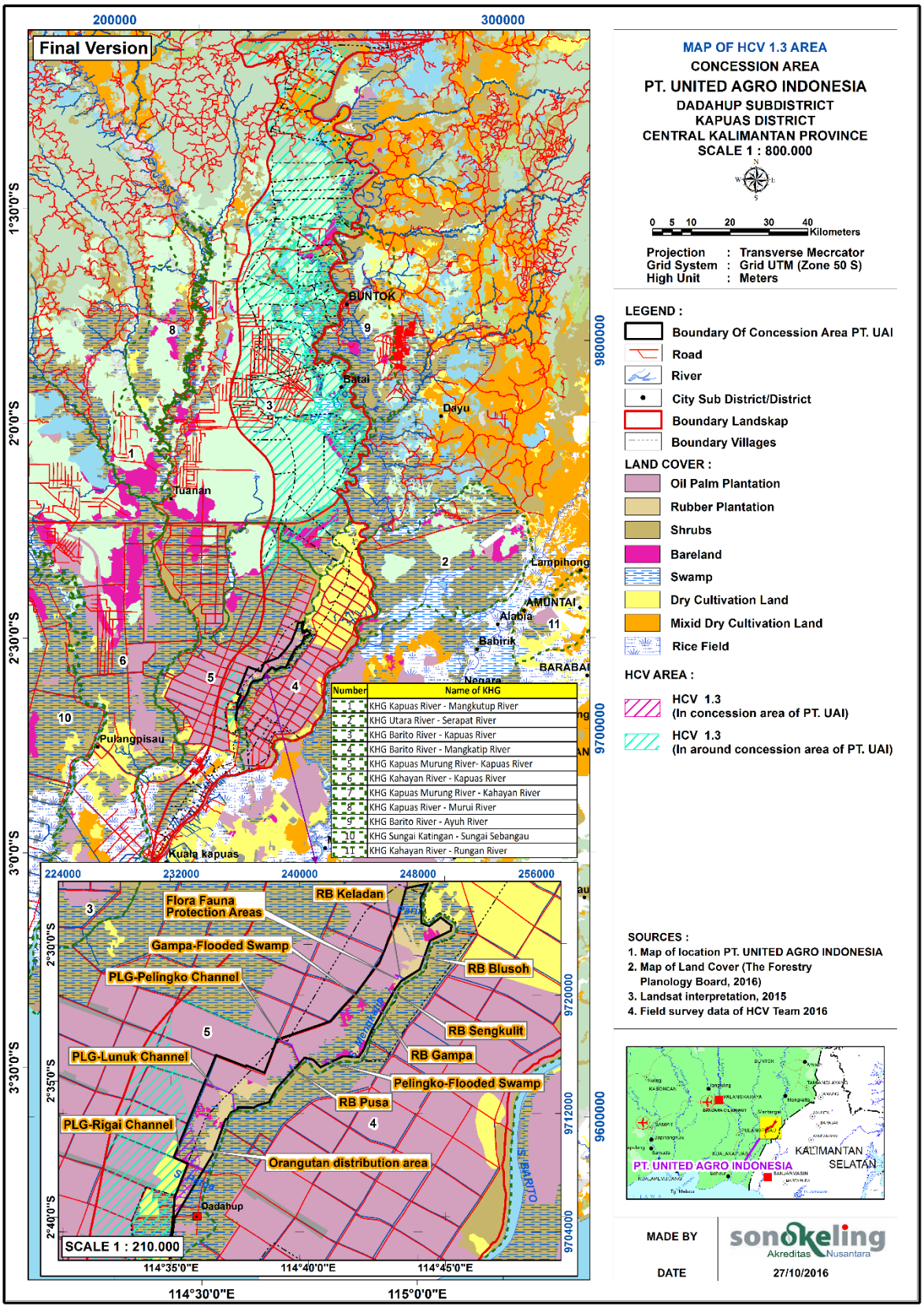


Figure 21. Peta Distribusi Areal NKT 1.3. di dalam dan sekitar Areal Izin PT. UAI

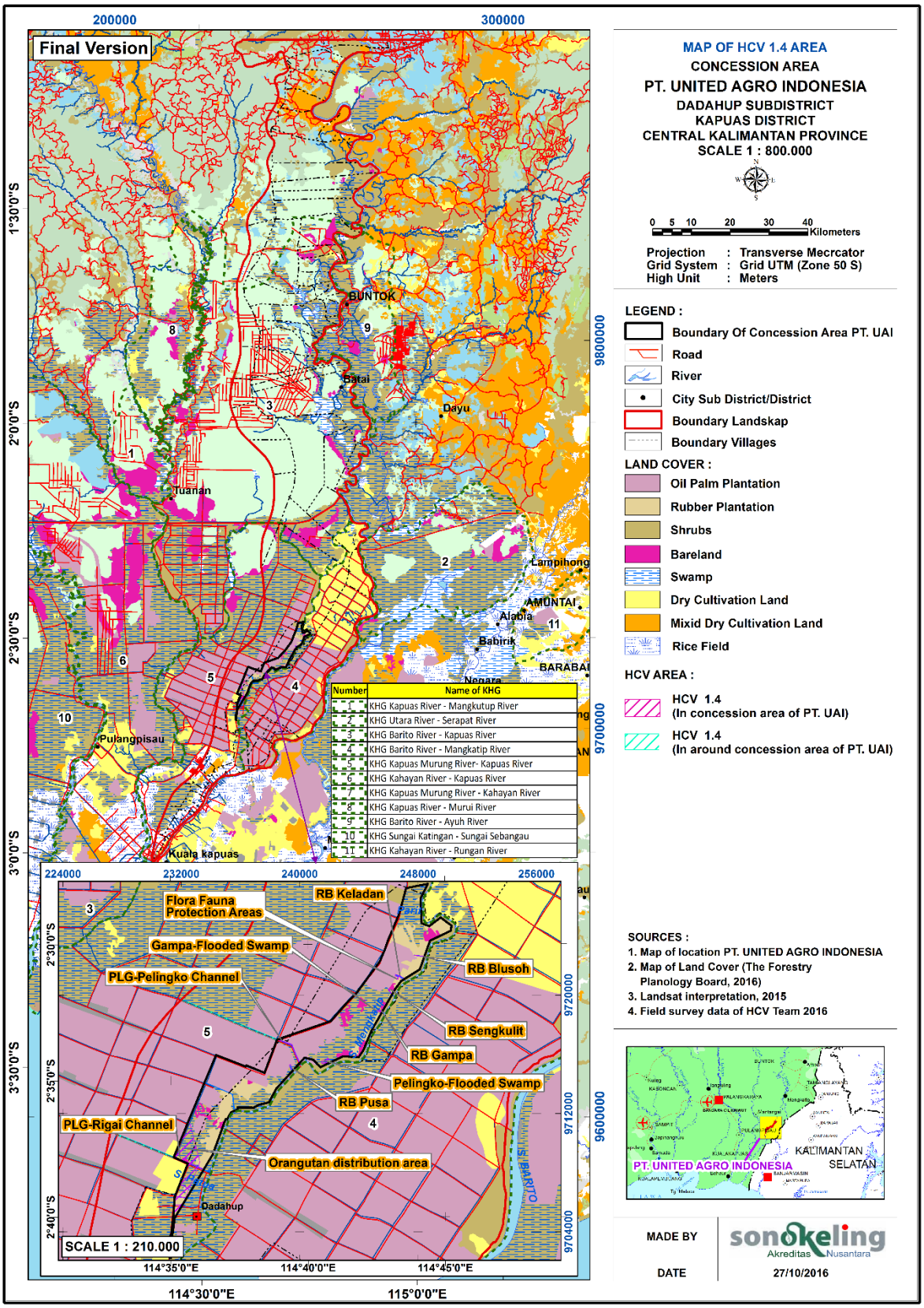
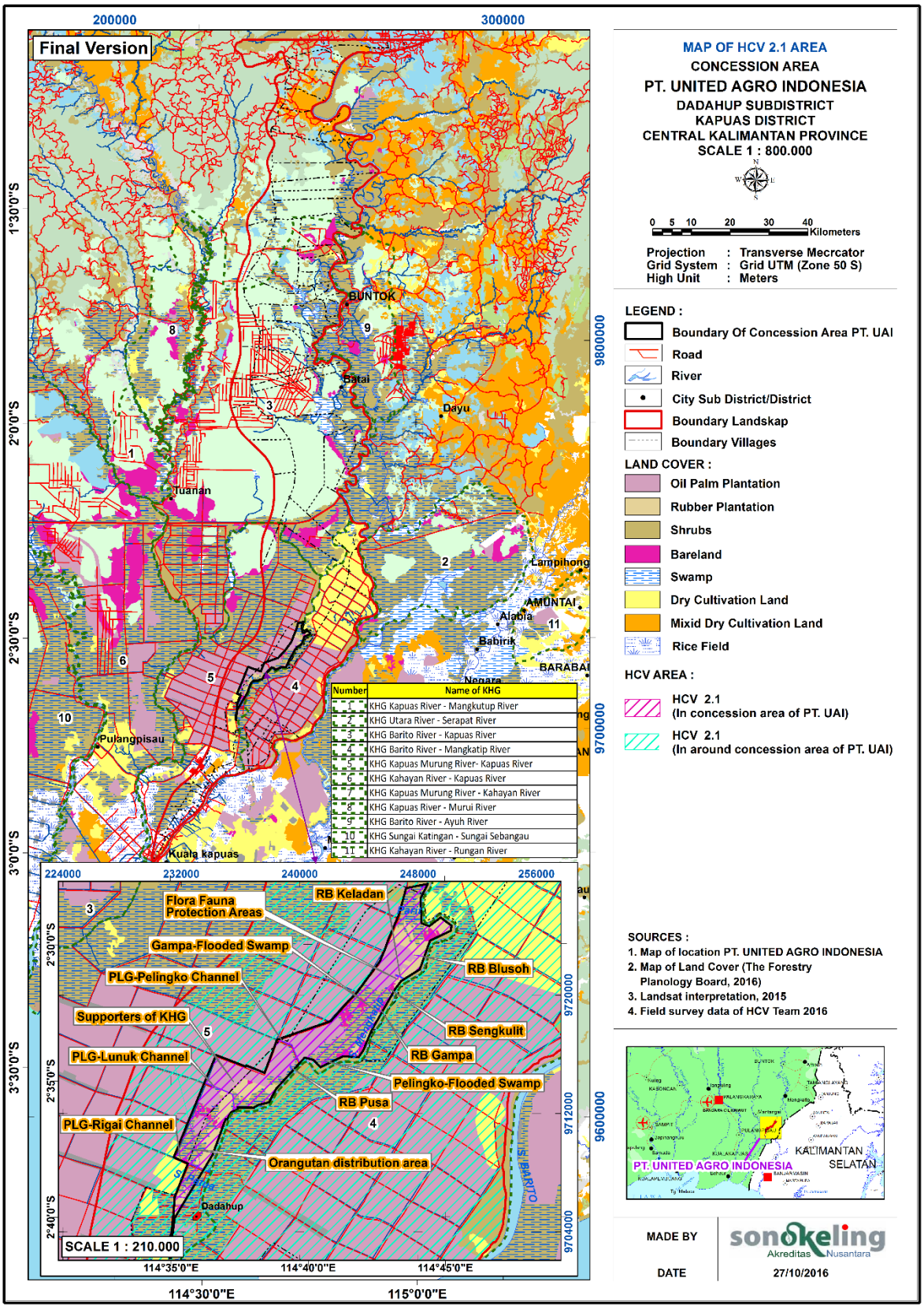


Figure 22. Map of HCV 1.4. Area Distribution in the Permit Area of PT. UAI



Map 23. Map of HCV 2.1. Area Distribution in the Permit Area of PT UAI

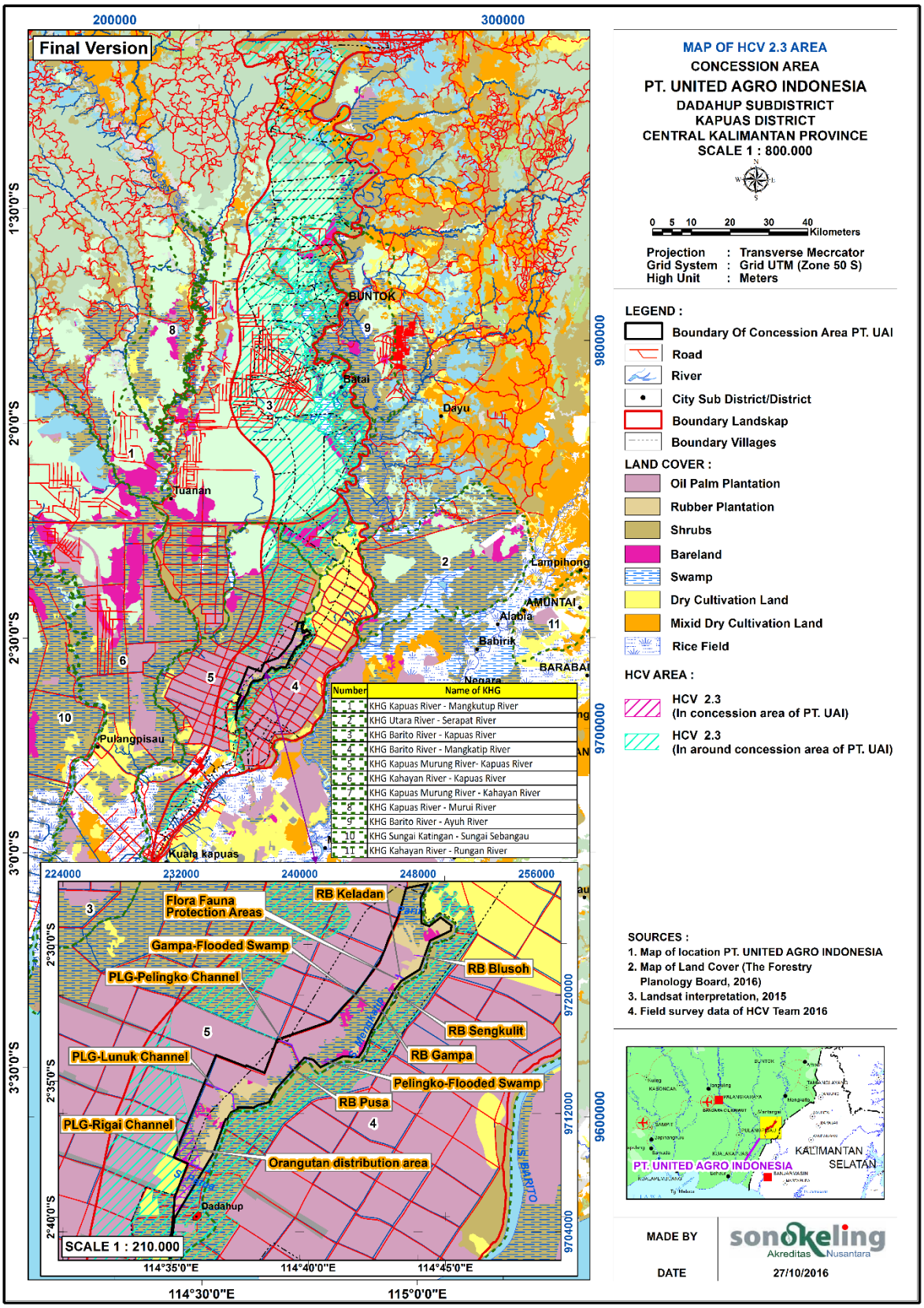


Figure 24. Map of HCV 2.3 Area Distribution in the Permit Area of PT. UAI

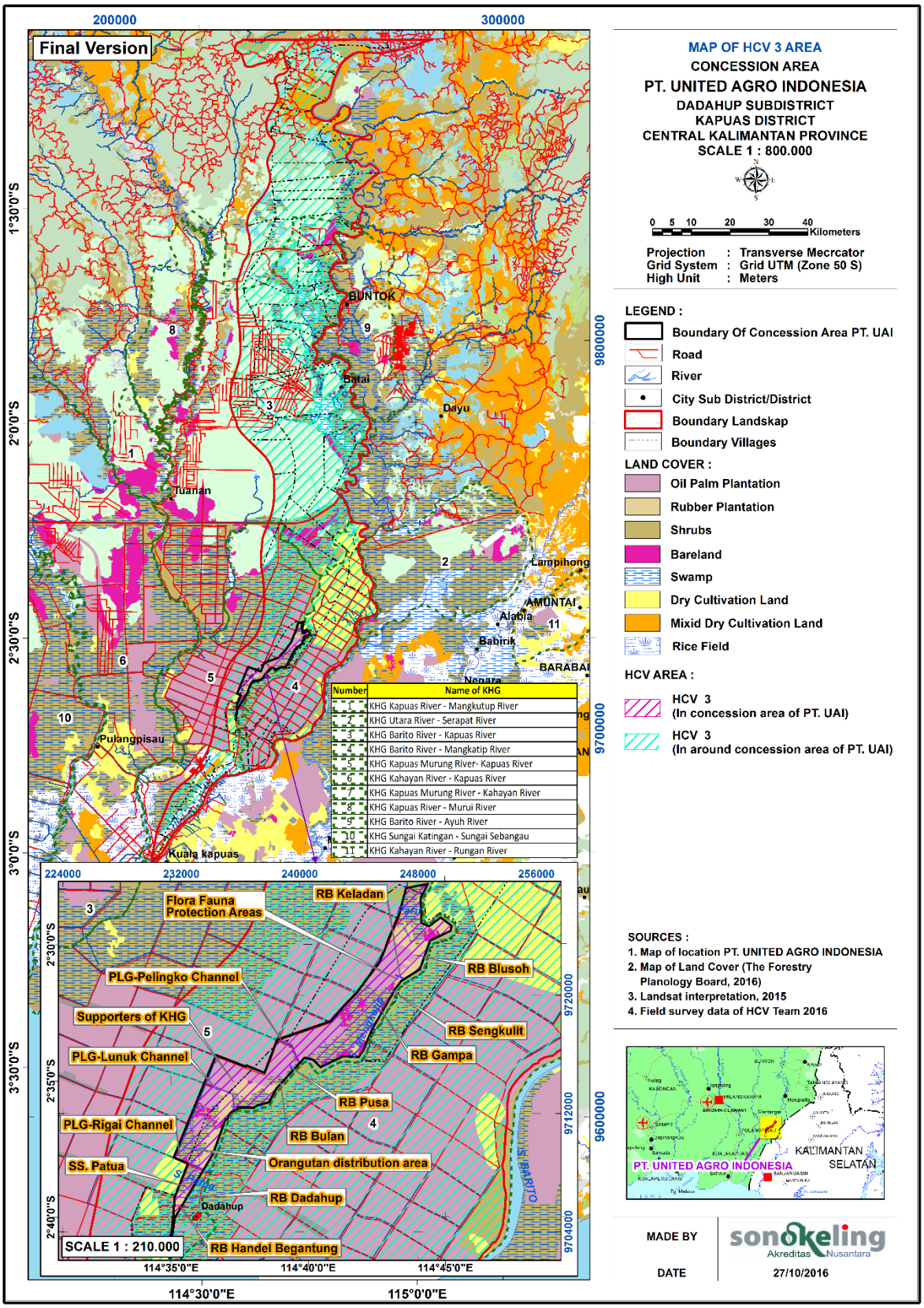


Figure 25. Map of HCV 3 Area Distribution in the Permit Area of PT. UAI

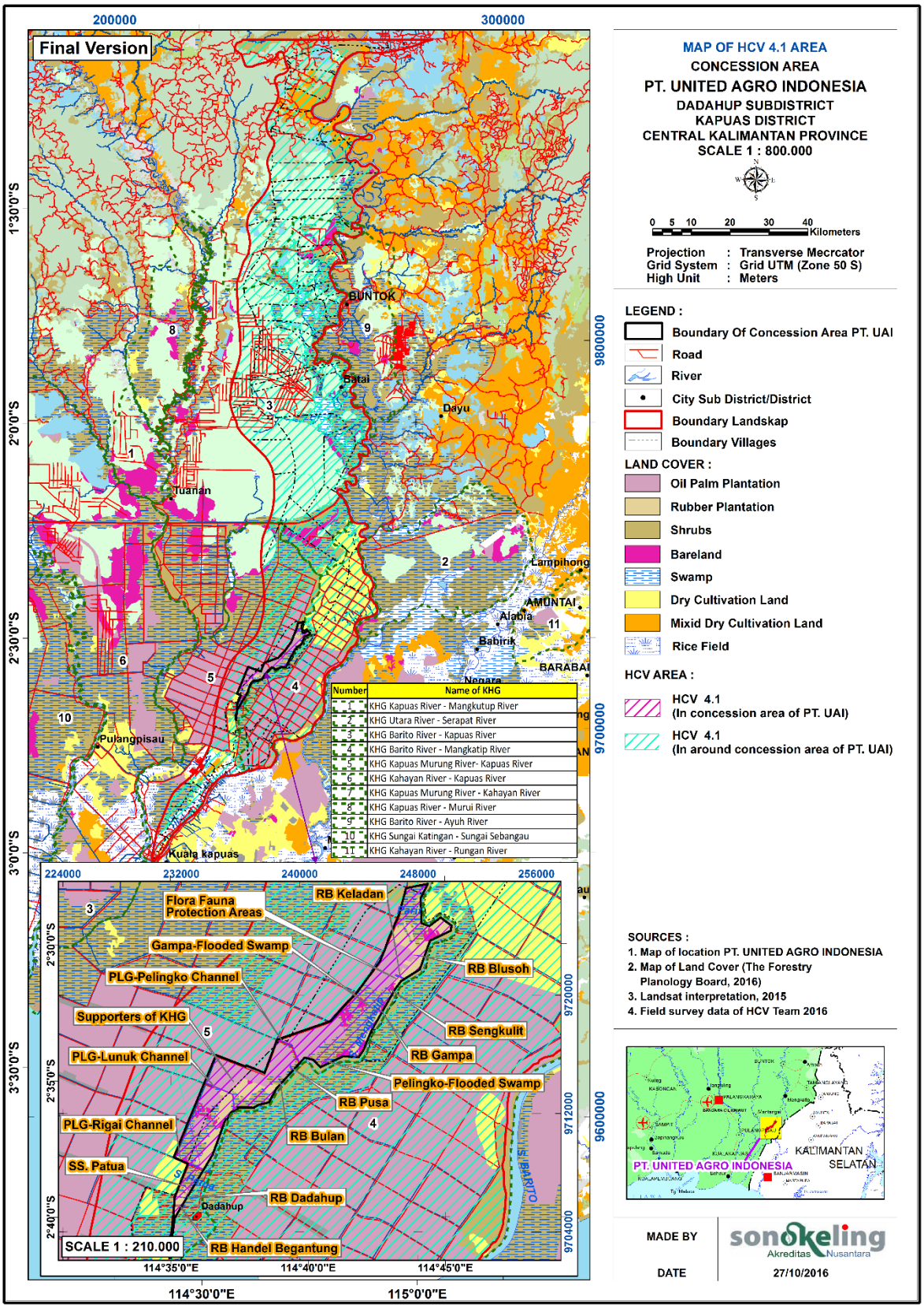


Figure 26. Map of HCV 4.1. Area Distribution in the Permit Area of PT. UAI

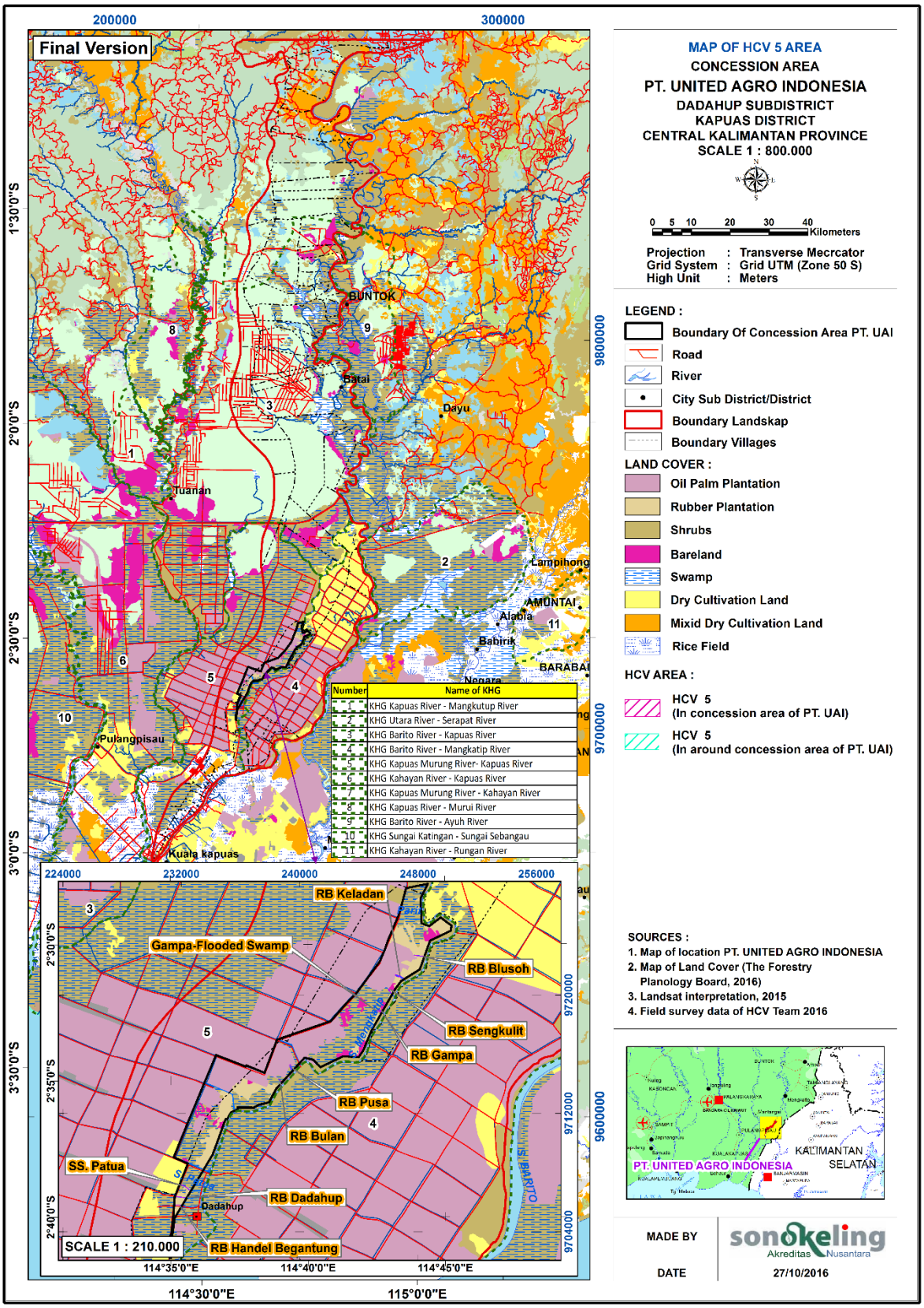


Figure 27. Map of HCV 5 Area Distribution in the Permit Area of PT. UAI

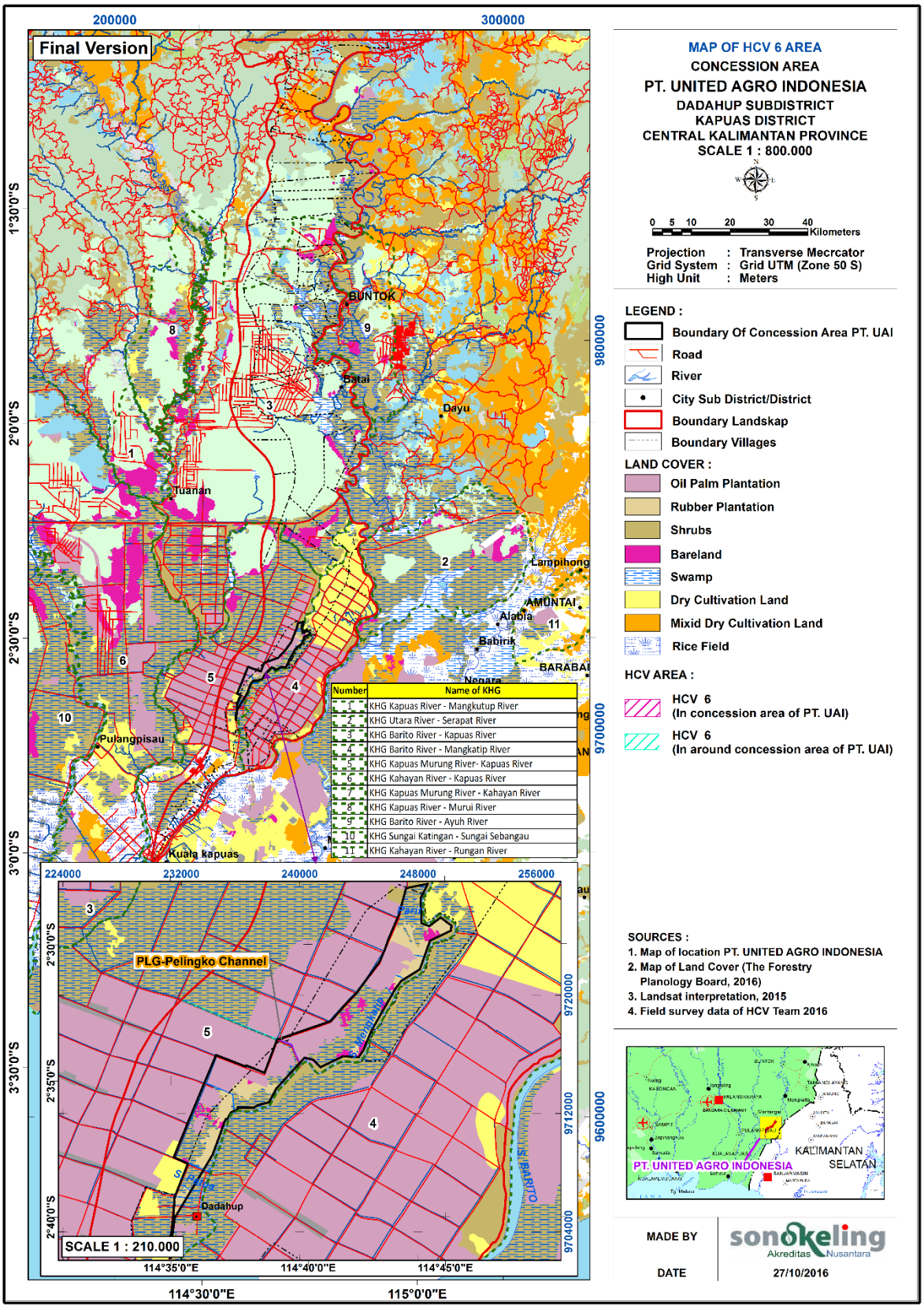


Figure 28. Map of HCV 6 Area Distribution in the Permit Area PT. UAI

3.2.5. Consultation with stakeholders

The Stakeholder Consultation was held on Monday 18 January 2016, in the Hall of Dadahup Subdistrict, attended by 35 people, representing several government agencies such as: BAPPEDA Kapuas Regency, Kapuas District Forestry and Plantation Service, Kapuas District Environmental Agency, Muspika Dadahup District (Camat, Polsek, Danramil), UM staff (Management Unit), Kapuas Regency NGOs, and Local Communities (village heads, BPD (Village Consultative Body), village officials, traditional leaders and community leaders). Issues presented in public consultations include: HCV understanding and categories / sub-categories, objectives and benefits of HCV assessments, HCV assessment processes, HCV assessment methods, field observations (biodiversity, environmental services and social culture), findings / the results of the provisional HCV assessment and its map (draft version), threats to the HCV and recommendations for management and monitoring of the HCV area. In addition, interviews were also conducted with PT UAI employees who mostly came from the surrounding community.

Tabel 19. Summary of consultation with stakeholders as well as the main issues or issues raised by them along with the recommendations submitted

Date	Name	Position/Rules	Organization/Social Group	Main Issues & recommendation	Respons Assessment Tim
18 January 2016	Saleh	Head of District Environmental Body	District Environmental Body	Potential natural resources must be considered in HCV assessments	The potential of natural resources considered in the HCV assessment concerns biodiversity (HCV1 to HCV3), environmental services (HCV4) and sosekbud (HCV5 and HCV6)
18 January 2016	H. Abdul Kadir	Head of Islamic scholars Council (Majelis Ulama Islam) at the sub district level	Islamic Scholars Council (MUI) at the sub district	Plant construction plan, and Plant waste management plan	The plant will be built according to the plan. Factory waste management will be carried out in accordance with the AMDAL including the Management Plan and Monitoring Plan.
18 Januariy2016	Kristofel	Community Relation staff	PT GAL Dadahup village	The problem of orangutan disturbance	• Orangutans are found in the area. To resolve the conflict orang utan can be done in several ways, among others: (1) relocation to another place in coordination with BKSDA Kalteng or BOS. • Improving habitat by enrichment planting with orangutan forage species.
18 January 2016	Heru	Executive Director	Kuala Kapuas Foundation	• Potential river water pollution • There are potential plants that need to be preserved and developed.	• To resolve the possibility of river water pollution, the HCV assessment team will recommend to the company several activities, including: managing

Date	Name	Position/Rules	Organization/Social Group	Main Issues & recommendation	Respons Assessment Tim
				• Natural insulation already exists in the form of rivers. • The names of wild animals need to be used with the name of the local area. • The community should not be as an object.	river / canal borders, conducting rehabilitation / enrichment in damaged river / canal border areas, applying best palm management practices in river / canal border area that has been planted with oil palm, and periodically checks the quality of river / canal water. • Potential of plants found in these areas can be considered in enrichment planting in High Conservation Value Areas. • Not all rivers can function as natural barriers. It really depends on the width of the river border, land cover conditions on both sides of the river, and water conditions during the dry season. • Advice regarding the names of plant and wildlife locations for using the local local name will be considered in the preparation of the report. • In managing and monitoring HCVs, companies can work together with other parties. Thus the community will not become mere objects.
18 January 2016	Yenny Sakalessy	Staff	District Plantation Agency	• In the development of oil palm plantations must be in accordance with applicable laws and regulations.	• In HCV assessments in particular, the HCV assessment team will refer to all applicable laws and regulations.
18 January 2016	Saifuddin	Sub District Military Commando	Sub District Military Commando Dadahup	• The HCV Assessment Team (Consultants) must be provided truthful and objective information.	• The HCV Assessment Team / Consultant is an independent institution and must conduct an objective assessment because the Chair of the HCV Assessment Team is licensed by the ALS-

Date	Name	Position/Rules	Organization/Social Group	Main Issues & recommendation	Respons Assessment Tim
				• In the area of PT. UAI has been planted an area of 2,000 hectares of oil palm.	HCV-RN and has signed a code of ethics in the HCV assessment. • The area of PT. UAI which has been planted with oil palm covering an area of 2,353.44 ha. PT. UAI has not conducted operational activities in the field. The area of oil palm planting that has been carried out on an area of 2,353.44 ha has been carried out by companies holding previous licenses.

3.2.6. Threat Assessment

Table 20. Threat Assessment in the Permit Area PT UAI

HCV	A Brief Description of the Presence of Values in the Valuation Area	Main Threarts
1	**Species Diversity:** • **HCV area 1.1.** : 9 river borders (Blusoh river, Keladan river, Sengkulit river, Gampa river, Pusa river, Bulan river, Patua river, Handel river Begantung river, Dadahup river) and 3 canal borders (PLG-Pelingko Canal, Canal Borders) PLG-Rigai, and PLG-Lunuk Canal Borders); Swamp (Pelingko Swamp and Gempa Swamp); and the Peat Hydrology Area (KHG) (KHG Kapuas Murung River - Kapuas River). • **HCV Species 1.2**: plant and animal species which are categorized as endangered (CR / Critically Endangered) based on the IUCN Red List of Critically Endangered Species, namely 1 plant species (Belangiran (*Shorea belaangiran* (Korth.) Burck.) And 2 species of fauna Pangolin (*Manis javanica*) and Orang Utans (*Pongo Pygmaeus*)). • **HCV Species 1.3**. 14 species of plants and / or wild animals protected according to Government Regulation Number 7 of 1999 (wild animals); included in the CITES List as many as 15 types include: Appendix I as many as 3 types (wildlife) and Appendix II as many as 12 species (1 plant species and 11 species of wildlife); included in the category of VU / Vulnerable (vulnerable) as many as 2 types (wild animals), EN / Endangered (critical) as many as 2 types (wild animals), and CR / Critically Endangered) (critical) according to	**At present:** • Wildlife hunting by the community. • Pollution of river water due to the use of chemicals (fertilizers and pesticides) from the company's oil palm plantations and community farms. • Making canal • Drying wetlands • Land Fire • Planting exotic plants. • Weak law enforcemen **Potential** : • Decreased river water quality due to land clearing, washing / runoff of fertilizers & pesticides or other pollution from oil palm plantations that enter rivers. • Reduced habitat area due to land conversion in the form of shrubs and shrubs that are in the boundaries of rivers and swamps carried out by the community into gardens / agricultural fields. • Pollution of household waste. • Construction of roads that cross the HCV area. • Land fires. • Making canals by people who cut HCV areas and cut contours. • Expansion of land drying

HCV	A Brief Description of the Presence of Values in the Valuation Area	Main Threarts
	IUCN as many as 3 species (1 plant species and 2 wild animal type) • HCV Species 1.4: Orangutans *(Pongo pygmaeus*).	
2	**Ecosystems, Mosaics at Landscape Level and Whole Forest Landscape** • HCV 2.1. PT UAI's location permit area is part of the land ecosystem providing a supporting function for the Peat Hydrology Area (KHG) which plays an important role in protecting water systems in the context of the peatland ecosystem landscape. The dynamics of the flow of environmental services provided by peat ecosystems are below the surface of the soil, so the analysis of the linkages between ecosystems cannot be analyzed through land surface analysis but is determined based on the location of the peat dome (peat dome). Based on the KHG map showing that PT UAI's location permit area is directly adjacent to the KHG indicatively, considering that the dynamics of the peat ecosystem landscape occur below the surface of the land, the existence of a location permit will provide an important supporting function for KHG and the development of oil palm plantations in the PT. UAI will have an impact on KHG.	**At Present**: • Pollution of river water due to the use of chemicals (fertilizers and pesticides) from the company's oil palm plantations and community farms. • Making Canal • Drying wetlands • Land Fire • Planting exotic plants. • Weak law enforcement. **Potential** : • Decreased river water quality due to land clearing, washing / runoff of fertilizers & pesticides or other pollution from oil palm plantations that enter rivers. • Reduced habitat area due to land conversion in the form of shrubs and shrubs that are in the boundaries of rivers and swamps carried out by the community into gardens / agricultural fields. • Making canals by people who cut HCV areas and cut contours. • Expansion of land drying • Land fires.
	• **HCV 2.3.** The area used as a local *orangutan* movement area is from the permit area to the surrounding area or vice versa, namely the Blusoh river border, Keladan river border, Sengkulit river border, Gampa river border, Pusa river border, PLG-Pelingko Canal, PLG-Rigai Canal Borders, PLG-Lunuk Canal Borders, Swamp (Swamp-Swamped-Pelingko and Swamp-Flood Canal); Flora and Fauna Protection Areas; *Orangutan* distribution area.	**At present:** • Pollution of river water due to the use of chemicals (fertilizers and pesticides) from the company's oil palm plantations and community farms. • Planting exotic plants. • Weak law enforcement. **Potential** : • Decreased river water quality due to land clearing, washing / runoff of fertilizers & pesticides or other pollution from oil palm plantations that enter rivers. • Reduced habitat area due to land conversion in the form of shrubs and shrubs that are in the boundaries of rivers and swamps carried out by the community into gardens / agricultural fields. • Land fires.
3	**Rare, endangered or endangered ecosystems, habitats or refugia** • HCV 3. PT UAI's location permit area and assessment boundary landscape are peatland ecosystems and are the same landscape unit. Although there are various associations of ecosystem types, however, these associations have undergone changes and the facts on the ground are that most areas are peat swamp ecosystems and this is reinforced by the establishment of Peat Hydrological Areas (KHG) in these areas. Considering the precautionary principle, the PT UAI location permit area is part of the peat swamp and wetland ecosystem which is included in the category of rare ecosystems, so in the area of the permit and landscape the assessment boundary is indicated to contain HCV 3.	**At Present** • Pollution of river water due to the use of chemicals (fertilizers and pesticides) from the company's oil palm plantations and community farms. • Making Canal • Drying wetlands • Land Fire • Planting exotic plants. • Weak law enforcement. **Potential** : • Decreased river water quality due to land clearing, washing / runoff of fertilizers & pesticides or other pollution from oil palm plantations that enter rivers. • Reduced habitat area due to land conversion in the form of shrubs and shrubs that are in the

HCV	A Brief Description of the Presence of Values in the Valuation Area	Main Threarts
		boundaries of rivers and swamps carried out by the community into gardens / agricultural fields. • Making canals by people who cut HCV areas and cut contours. • Expansion of land drying • Land fires.
4	**Environmental Services :** • **HCV 4.1.** 9 rivers and their watersheds (Blusoh river, Keladan river, Sengkulit river, Gampa river, Pusa river, Bulan river, Patua river, Handel river, Begantung river, and Dadahup river; 3 canals and their borders (PLG Canal) - Pelingko, PLG-Rigai Canal, and PLG-Lunuk Canal), 2 swamps (Inundated Swamps - Pelingko and Inundated Swamps), and Peat Hydrological Areas (KHG) (KHG Kapuas Murung River - Kapuas River).	**<u>At Present</u> :** • Loss of land cover in the form of shrubs and shrubs in rivers and swamps. • Canalization and drainage of land for cultivation activities • Pollution of river water due to the use of chemicals (fertilizers and pesticides) from the company's oil palm plantations and community farms. • Weak law enforcement. **<u>Potential</u> :** • Company operational activities that will result in river / canal silting, increase in river / canal water flow in the rainy season and a decrease in river / canal water flow in the dry season, and increase erosion. • Increase in the number of Canal • Expansion of drying area • Pollution of household waste. • Loss of water supply needed by downstream communities.
5	**Community Needs:** • The communities of Dadahup and TambakBajai villages have a> 50% dependency level on the PT. UAI to meet the basic needs of water and protein (fish); while Sumber Makmur Village has a> 50% dependency level on the PT. UAI to meet basic needs in the form of protein (fish). • The location of forest resources (including rivers) that are used by the community in Dadahup Village to meet water needs for drinking and cooking include: S. Pusa, S. Bulan, S. Patua, S. Handel Begantung, and S. Dadahup; while to meet the needs of protein (fish) are S. Pusa, S. Bulan, S. Patua, S. Handel Begantung, S. Dadahup, and Swamp-Flooded (Beje). • The location of forest resources (including rivers) that are used by the community in Sumber Makmur Village to meet water needs for drinking and cooking include: S. Pusa and S. Bulan. • Location of forest resources (including rivers) used by the community in Tambak Bajai Village to meet water needs for drinking and cooking, as well as meeting protein (fish) needs, including: S. Blusoh, S. Keladan, S. Sengkulit, and S. Gampa, and Swamp-Gampa (Beje) Swamp to look for fish. • Sustainable use of fish by the community	**<u>At present:</u>** • Pollution of river water due to the use of chemicals (fertilizers and pesticides) from the company's oil palm plantations and community farms. • Weak law enforcement. **<u>Potential</u> :** • Pollution of household waste. • Loss of drinking water sources due to river water pollution
6	**Cultural Values**	**<u>At Present</u>** • There is no

HCV	A Brief Description of the Presence of Values in the Valuation Area	Main Threarts
	• Distribution of ritual activities: Place of Offerings, Malaga wine, and Placing of Yellow Flags which are located in the PLG-Pelingko Canal**.**	**Potential** • Land clearing activities, road construction and other facilities that do not pay attention to the distribution of ritual activities. • Loss of community access to the distribution of ritual activities**.**

3.3. Soil

Description and soil clasification

Based on the criteria of Soil Classification according to Soil Taxonomy (USDA, 2010) and its equivalent according to the National Soil Classification structure (BBSDL, 2014), the land units are classified morphogenically. Based on morphological data and laboratory analysis at the survey location, the type of soil in the form of the Inceptisol order (Table 21).

Table 21. Classification of PT. United Agro Indonesia

Ordo	Sub Ordo	Great Group	Sub Group
Inceptisols	Aquept	Endoaquepts	Typic Endoaquepts
	Aqueots	Sulfaquepts	Typic Sulfaquepts

Inceptisol soils that are formed on site due to Alluvial influence that includes land that is affected by river activity or flooding, so it can be considered young and there is no horizon yet. Soil comes from new deposits, layers, organic matter, the amount changes irregularly with depth. There are only ochrik, mystic or sulfuric epipedon.

Part of the Inceptisols land in the PT. United Agro Indonesia is a soil that is derived from alluvial or young coluvial deposits with a weak soil profile development to none with a grayish to brownish color.

Swampy flat areas, the ground is often flooded with water so that the color is dark gray or black. This soil is widely associated with organosol soils, low humus gley, and gray hydromorph. Many types of soil are found in tidal areas. In general, inceptisols have relatively good chemical properties so that their productivity is relatively low to high.

Aquept are Inceptisols that have an aquatic condition for a part of time or have been drained. Natural drainage is inhibited or severely inhibited if the soil has not been artificially drained, groundwater is at or near the surface of the soil at some time during the normal year but usually not at all seasons. This soil generally has gray to black surface horizons and a gray undercoat with redox concentrations that begin at a depth of less than 50 cm. Some soils have brownish surface horizons that are less than 50 cm thick.

Most Aquepts are formed in late-Pleistocene deposits or younger in basins, on near level plains or in floodplains. They occur from the Equator to latitude with intermittent permafrost. Common features of most of these soils are grayish and reddish redoximorphic features at depths of 50 cm or less and unless the soil has been artificially drained, shallow ground water. Aquepts may have almost all particle-size classes except fragments, every reaction class, every temperature regime and almost all vegetation. Most of the land has cambic horizons and some have fragments a. It is possible that some have plaggen epipedons.

Land Map Unit 1.

Is a land unit with dusty clay textured soil (10 YR 3/4); with firm consistency when moist, soil color is very dark gray brown (10 YR 3/2); clay lumpy structure, smooth, strong, rather hard when dry, firm (moist), gradually flat boundary. Subsoil color 10 YR 3/3 with 100 cm depth of solum and 80 cm deep ground water table and soil pH 4.5. Unit 1 has a slope of 0 - 3% and occupies terrain physiography. Soil comes from Alluvial source rock. The area of SPT 1 is 23.4 ha (0.35%) of the total area of PT. United Agro Indonesia.

Land Map Unit 2

Is a land unit with dusty clay textured soil (10 YR 2/1); with firm consistency when moist, dark black soil color which is an organic material from the remains of burnt plants, very dark (10 YR 3/2); clay lumpy structure, smooth, strong, a bit hard when dry, firm (moist), flat gradual boundaries and soil color sub-surface 10 YR 3/3 with a solum depth of 125 cm, ground water level is at a depth of 60 cm with a state of acidity the soil is at pH 4.0. Unit 2 has a slope of 0 - 3% and occupies terrain physiography. Soil comes from Alluvial source rock. The area of SPL 2 is 658.12 ha (9.79%) of the total area of PT. United Agro Indonesia.

Land Map Unit 3

It is a unit of land with clayey textured clay dust, blackish brown ground color (10 YR 2/2); strong consistency when moist, granular structure, smooth, weak, many fine roots, irregular boundaries (diffuse), many small macro pores, few small micro pores. The depth of the solum is 100 cm and the depth of the ground water level is 80 cm, with the acidity of the soil at pH 4.0. Very dark brownish black color (10 YR 3/2); clay texture, dusty clay, lumpy structure, smooth, strong, rather hard when dry, firm (moist), gradually leveled flat. and sub-surface soil color 10 YR 3/3 with solum depth of 100 cm and ground water level as deep as 80 cm and soil pH 4.5. The color of the soil is very dark gray brown (10 YR 4/2), loamy clay dust, lumpy structure, medium, weak, very hard (dry), firm (moist), many fine roots, many root holes, many root holes and diffuse boundaries and the acidity of the soil is at pH 4.5. Land unit 3 has a slope of 0 - 3% and occupies terrain physiography. Soil comes from Alluvial source rock. The area of SPL 3 is 1931.25 ha (28.73%) of the total area of PT. United Agro Indonesia.

Land Map Unit 4

It is a unit of land with clayey clay dusty earthy soil color (5 Y 6/2), lumpy structure, medium, strong, firm (moist) gradually flattened. The depth of the solum is 125 cm and the depth of the ground water level is 85 cm with the level of the soil packaging being at pH 4. The color of the soil is yellowish brown (10 YR 4/4), has a rounded, medium, strong, firm structure when it is moist, the level is gradually flat, the level of acidity the soil is at pH 4. The color of the soil is light brown gray (10 YR 6/2), massive structure, hard when dry, firm if moist, many fine roots, irregular flat boundary or diffuse, soil acidity level is at pH 4 Land unit 4 has a slope level of 0 - 3% and occupies terrain pisiography. Soil comes from Alluvial source rock. The area of SPL 4 is 480.56 ha (7.51%) of the total area of the whole PT. United Agro Indonesia.

Land Map Unit 5

Is a unit of land with clayey textured clay dust, very dark gray soil color (10 YR 3/2); strong consistency when moist, lumpy structure, medium, medium-rough, very hard when dry, very firm when moist, lots of fine roots, many micro pores and gradual flat boundaries. The depth of the solum is 120 cm and the depth of the ground water level is 80 cm, with the acidity of the soil at pH 4.0. The color of the ground is dark gray brown (10 YR 3/3); clay texture, dusty clay, medium lumpy structure, smooth, strong, rather hard when dry, firm (moist), gradual boundary and soil color sub surface 10 YR 3/3 brownish gray rather dark with 100 cm depth of solum and ground water table as deep as 80 cm and soil pH 4.5. The color of the soil is very dark gray brown (10 YR 4/2), loamy clay dust, lumpy structure, medium, weak, very hard (dry), firm (moist), little fine roots, many micro

pores, few macro pores, irregular and unclear boundaries. The color of the soil is dark gray brown (10 YR 4/1), dusty clay texture, lumpy structure, medium, hard when dry, soil acidity level is at pH 4. Land unit 5 has a slope of 0 - 3% and occupies the physiography of the plain . Soil comes from Alluvial source rock. The area of SPL 5 is 3,629.19 ha (53.99%) of the total area of PT. United Agro Indonesia.

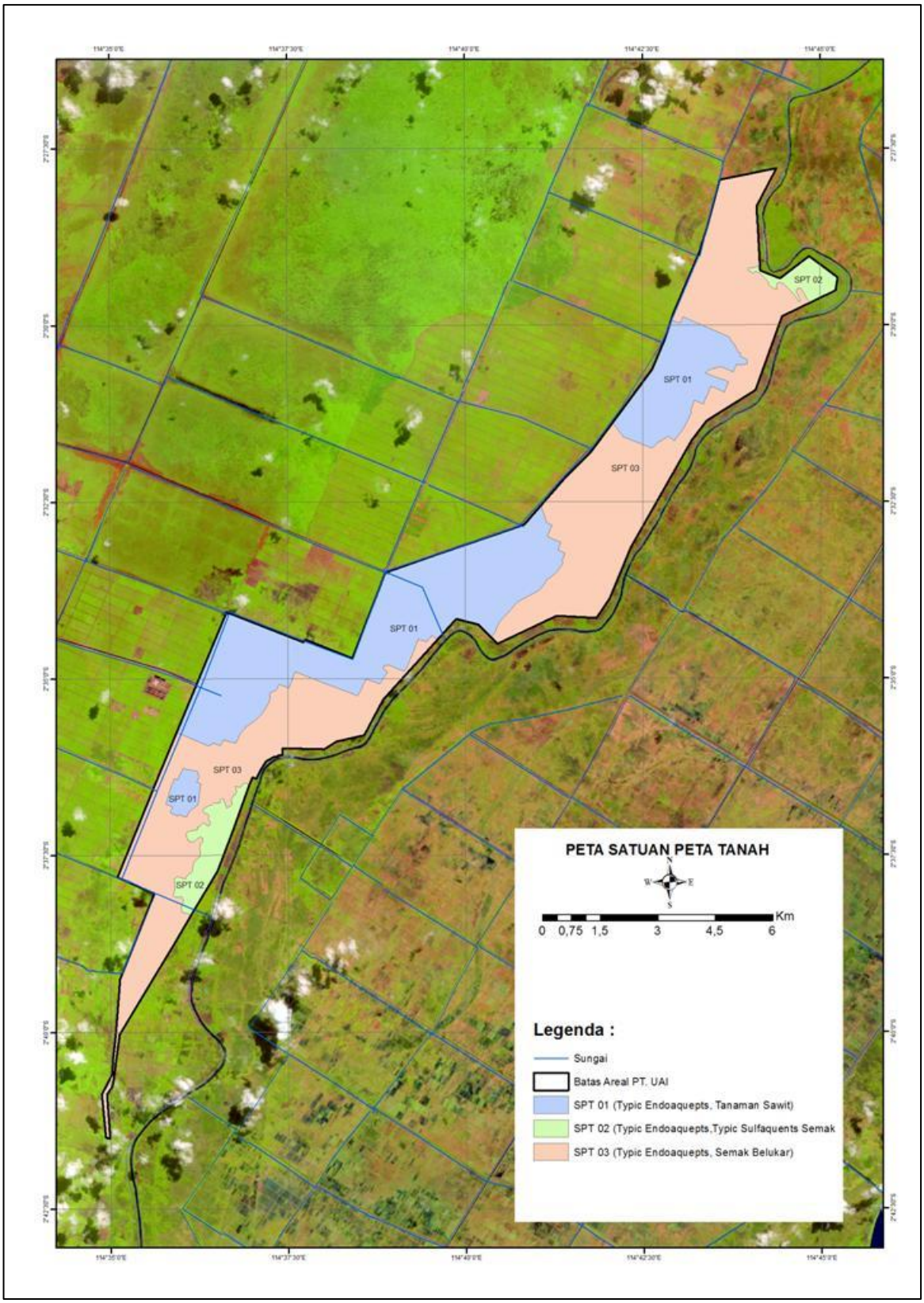


Figure 29. Map of Land Unit in the Oil Palm Plantation area of PT UAI

3.4. Summary of Carbon Stock Assessment and GHG emissions

Land Cover Class Description

Table 22. Physical description of land cover conditions in the HCS assessment in the PT. UAI

Land Cover Class	Carbon Average Value (Ton C/Ha)	Physical description of the land cover, such as species mix, forest type (pioneer, regeneration, primary etc.), diameter distribution, structural index, maturity index, etc.
Young Regenerating Forest	63,65	Dominated by primary vegetation, the most common types are Rengas (*Gluta renghas*) and Jemihing (*Dillenia pulchella*). The distribution of stems per hectare for diameter class 5-14.9 cm was 1,440 ind / ha, while diameter class> 15 cm was 442 ind / hectare.
Scrub	24,18	Many pioneer vegetation has begun to be found. The species mix is dominated by certain species, namely Gelam (*Melaleuca leucadendron*). The distribution of stems per hectare for diameter class 5-14.9 cm was 912.5 ind / ha, while for diameter class> 15 cm was 150 ind / hectare.
Plantations Forest	46,32	There is only one type found in this cover, namely Rubber (*Hevea brasilensis*). The stem distribution per hectare for diameter class 5-14.9 cm was 313 ind / ha, while for diameter class> 15 cm was 515 ind / hectare.
Mixed Rubber	55,06	It is a community cultivated land that is dominated by rubber (*Hevea brasiliensis*). The types of associations that are often encountered are Jemihing (*Dillenia pulchella*) and Jambu-guava (*Eugenia sp*). The distribution of stems per hectare for diameter class 5-14.9 cm was 1267 ind / ha, while for diameter class> 15 cm was 493 ind / hectare.

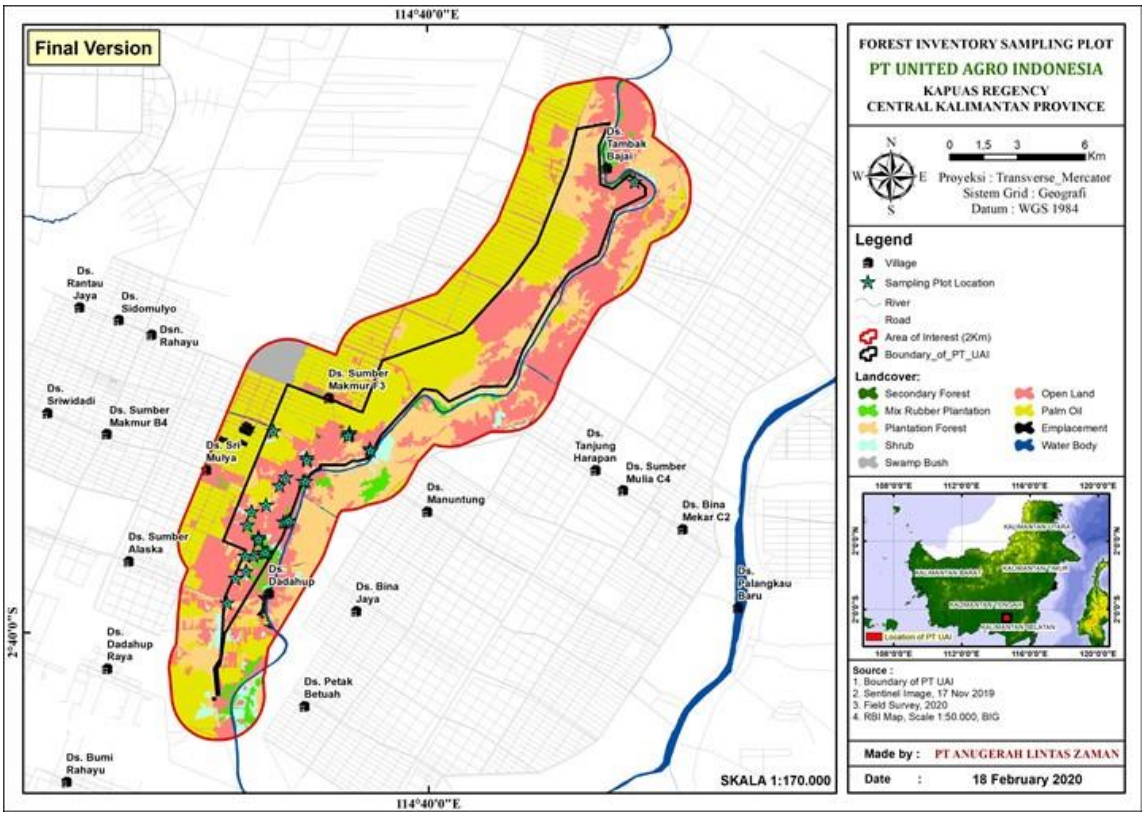


Figure 30. Map of sampling plot sampling in the permit area of PT. UAI

The average carbon stock for the Oil Palm closure class used reference carbon stocks of 40 tons C / ha each. **Table 23** shows a summary of the area of land cover (ha) in the area of PT. United Agro Indonesia and the estimated average carbon stock (tons C / ha).

Table 23. Summary of land cover area (ha) and estimated average carbon stock (tons C / ha) of PT. United Agro Indonesia

Land Cover Class	Area (Ha)	Carbon Stock (ton C/ha)	Total Carbon Stock (tC)
Young Regenerating Forest	30.58	63.65	1.946,42
Scrub	97.77	24.18	2,363.97
Plantation forest	1,398.86	46.32	64,795.10
Mixed rubber	123.04	55.06	6,774.42
Oil palm plantation	2,384.87	40.00	95,394.65
Bush	820.86	-	-
Open land	1.866,65	-	-
Emplacement	0.56	-	-
Water body	0.38	-	-
Total	**6,723.55**		**171,274.56**

Source: HCSA PT UAI

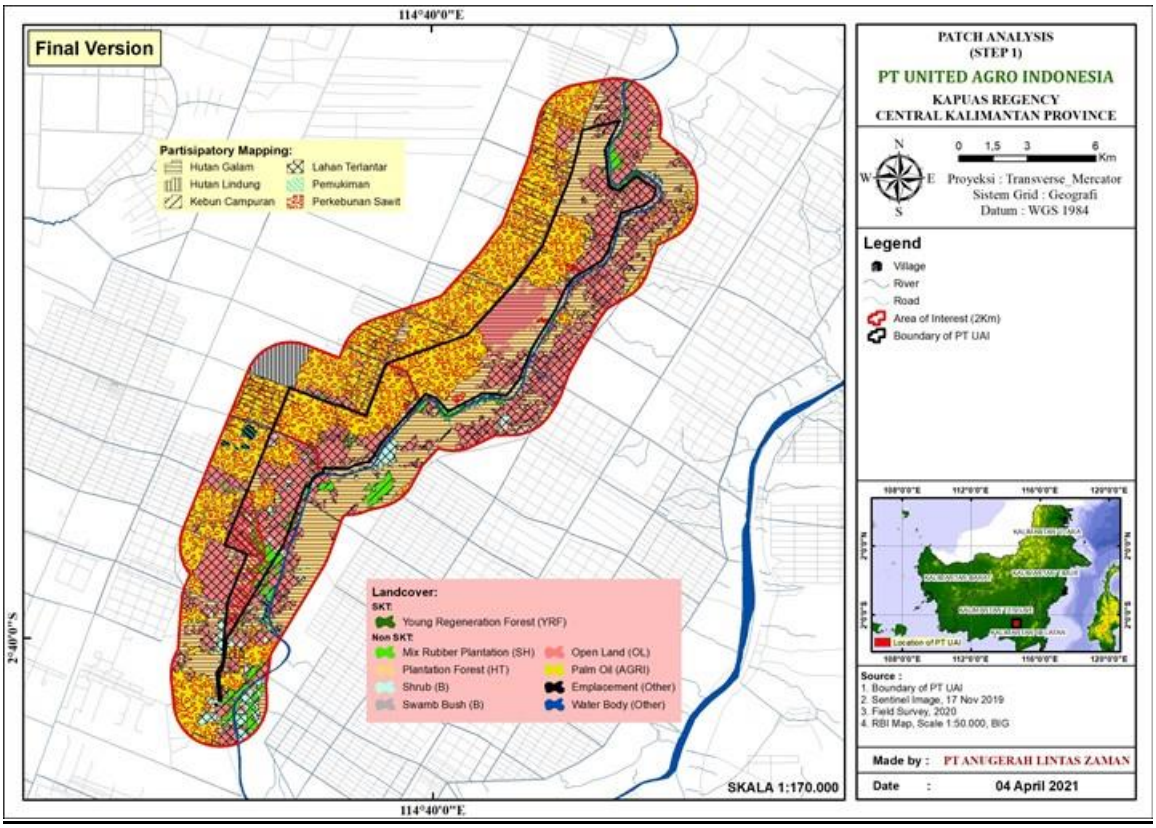


Figure 31. Patch Analysis (Step 1)

Integration of Carbon Stocks with HCV Findings

Based on the study on the identification of HCV and HCS areas, in the permit area of PT. United Agro Indonesia has a total HCV area of 573.62 ha and an HCS area outside the HCV of 30.58 ha. Table 24 shows the integration of carbon stocks in various land cover areas with HCV and HCS areas in the PT. United Agro Indonesia.

Table 24. Summary of Integration of Carbon Stocks with HCV and HCS Findings in the oil palm plantation area of PT. United Agro Indonesia.

Land Cover & Carbon Stock Estimates	Areal HCV-HCS (ha)	Non Areal HCV-HCS (ha)
Disturbed Swamp Forest (DSF) - 89,98 ton C/ha	30,58	0
Shrubs (SCH) – 78,42 ton C/ha	302,91	903,86
Swamp Shrubs (SSH) – 37,12 ton C/ha	124,37	1.281,98
Oil Palm Plantation (OPL) – 40,00 ton C/ha	24,68	2.442,03
Bareland **(**BRL**) –** 4,10 ton C/ha	119,69	1.516,15
Total	***604,20**	**6.144,02**

**Total conservation area in the shp file (599,53)*

Map showing estimates of carbon stocks with HCV and HCS levels in the oil palm plantation area of PT. United Agro Indonesia is presented in **Figure 32.** While the map shows areas to be avoided and the potential for new plantings in the oil palm plantation area of PT. United Agro Indonesia is presented in **Figure 33.**

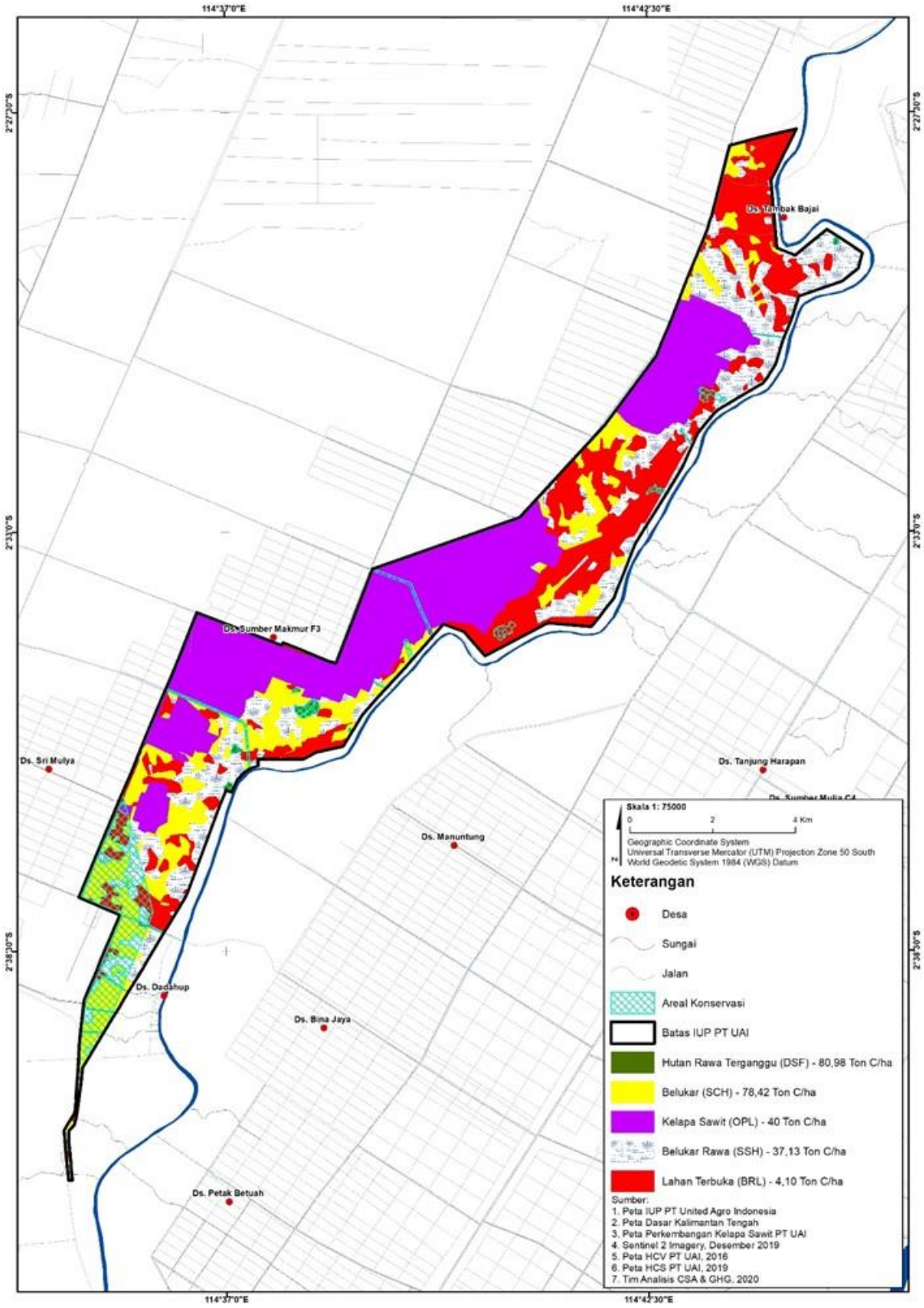


Figure 32. Estimated Carbon Stock Map on various land cover with HCV level in the area of PT. United Agro Indonesia

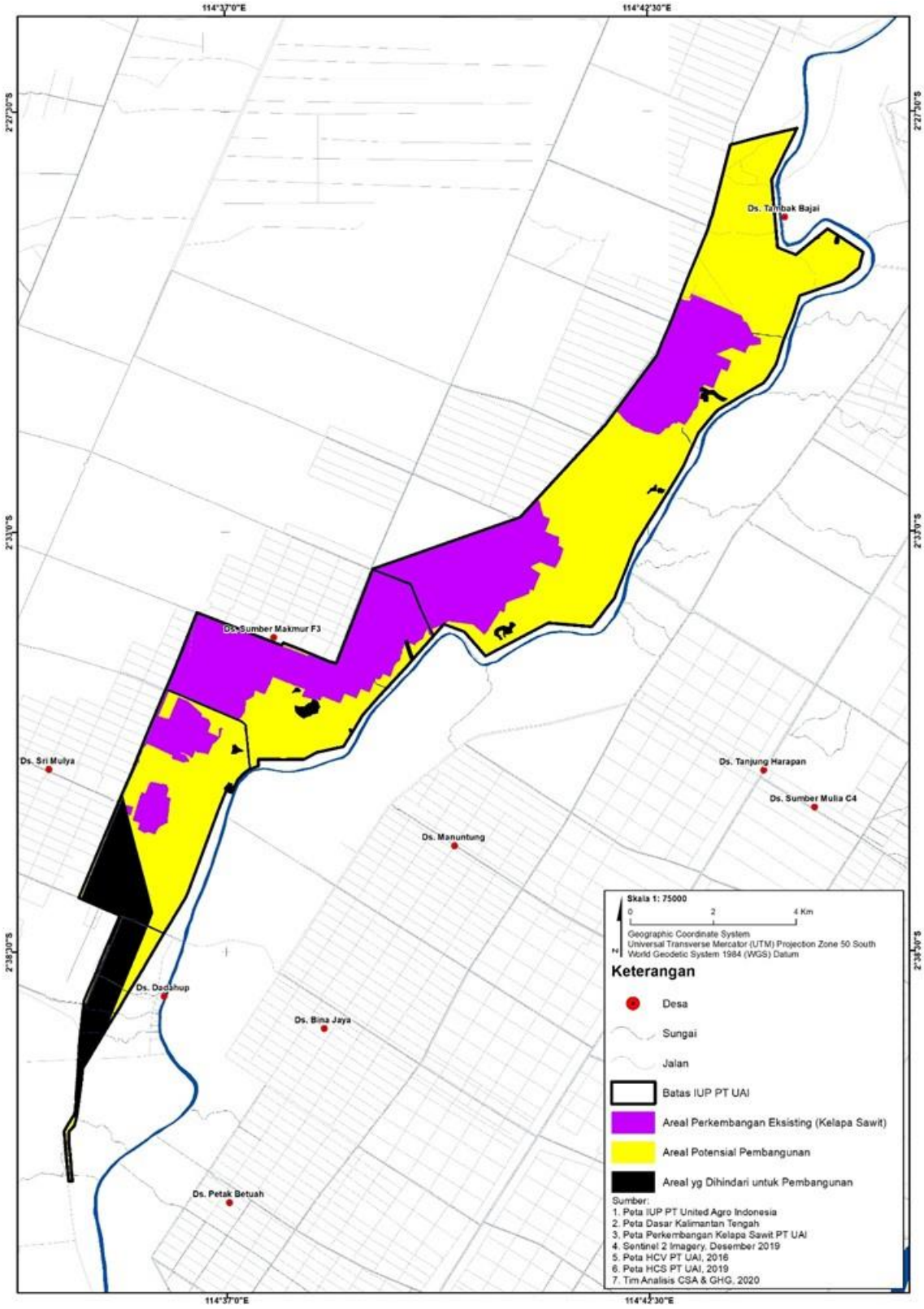


Figure 33. Map of areas to be avoided and potential for new plantings in the area of PT. United Agro Indonesia

New Development Scenarios

Table 25. Scenarios for new development in PT. United Agro Indonesia.

Scenario	Explanation
Scenario 1 (S1)	▪ All potential land cover for planting has just been opened for oil palm development. ▪ No methane capture facility is planned for the factory ▪ No land clearing in the HCV – HCS area was identified ▪ Plant area plan = 3,702.20 ha ▪ Conservation area plan = 604.20 ha
Scenario 2 (S2)	▪ All potential land cover for planting has only been opened to oil palm ▪ There is a methane capture facility planned for the plant ▪ No land clearing in the HCV – HCS area was identified ▪ Plant area plan = 3,702.20 ha ▪ Conservation area plan = 604.20 ha

		S1	S2
Regions avoided for new development	HCV & HCS Area	604.20 ha	604.20 ha
Areas that have the potential for new planting	*Shrubs*	903.86 ha	903.86 ha
	Swamp Shrubs	1,281.98 ha	1,281.98 ha
	Bareland	1.516,15 ha	1.516,15 ha
POME treatment	Conventional treatment	Yes	No
	Methane capture	Not	Exist

GHG Emission Projection

Projected GHG emissions in the area of PT. United Agro Indonesia is calculated using the RSPO New Development GHG Calculator to determine the projected emissions associated with the choice of scenarios developed.

Based on considerations to date PT. UAI has no plans yet to build a Methane Capture and then for a new planting plan, land clearing that is opened is only prioritized on shrub cover (SCH), swamp shrub (SSH) and open land (BRL). Then scenario 1 is the optimal development choice in the area of PT. United Agro Indonesia. In this scenario, GHG emissions from land clearing and operational activities will be absorbed by the conservation area (HCV - HCS area) and oil palm plants. Summary of GHG emissions for new development plans in the area of PT. United Agro Indonesia is presented in **Figure 34**. While the Map of New Development Plans in the area of PT. United Agro Indonesia is presented in **Figure 35.**

Scenario 1.

Summary of results

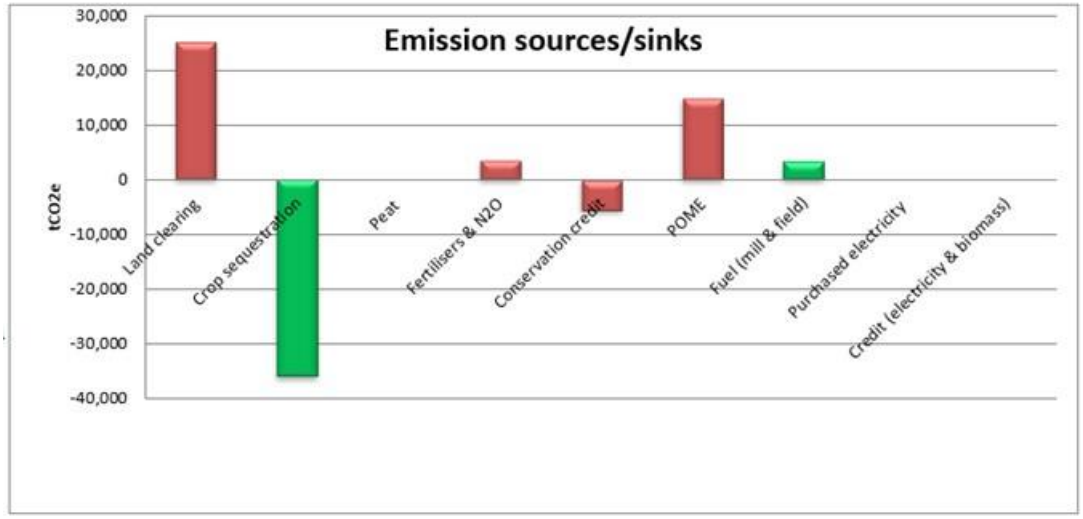
Summary of results

Field emissions & sinks (Assumes vigorous growth for oil palm – for use by large scale operations)

	t CO_2e	t CO_2e/ha	CO_2e/t FFB
Land clearing	25,120.34	6.54	0.33
Crop sequestration	-35,976.87	-9.36	-0.47
Fertilisers	1,759.59	0.46	0.02
N2O	1,927.26	0.50	0.03
Field fuel	376.81	0.10	0.00
Peat	0.00	0.00	0.00
Conservation credit	-5,540.51	-1.44	-0.07
Total	-12,333.38	-3.21	-0.16

Mill emissions & credit	tCO_2e	t CO_2e/ha	tCO_2e/tFFB
POME	14,990.42	3.90	0.20
Mill fuel	2,863.23	0.75	0.04
Purchased electricity	0.00	0.00	0.00
Credit (excess electricity exported)	0.00	0.00	0.00
Credit (sale of biomass for power)	0.00	0.00	0.00
Total	17,853.65	4.65	0.23

Total emissions, tCO_2e (field and mill) 5,520



Scenario 2.

Summary of results

Summary of results

Field emissions & sinks (Assumes vigorous growth for oil palm – for use by large scale operations)

	tCO_2e	tCO_2e/ha	CO_2e/t FFB
Land clearing	46,263.95	7.22	0.36
Crop sequestration	-59,946.66	-9.36	-0.47
Fertilisers	1,759.59	0.27	0.01
N2O	2,269.21	0.35	0.02
Field fuel	376.81	0.06	0.00
Peat	0.00	0.00	0.00
Conservation credit	-5,540.51	-0.87	-0.04
Total	-14,817.62	-2.31	-0.12

Mill emissions & credit	tCO_2e	tCO_2e/ha	tCO_2e/tFFB
POME	2,597.71	0.41	0.02
Mill fuel	4,770.87	0.75	0.04
Purchased electricity	0.00	0.00	0.00
Credit (excess electricity exported)	0.00	0.00	0.00
Credit (sale of biomass for power)	0.00	0.00	0.00
Total	7,368.58	1.15	0.06

Total emissions, tCO_2e (field and mill)	-7,449

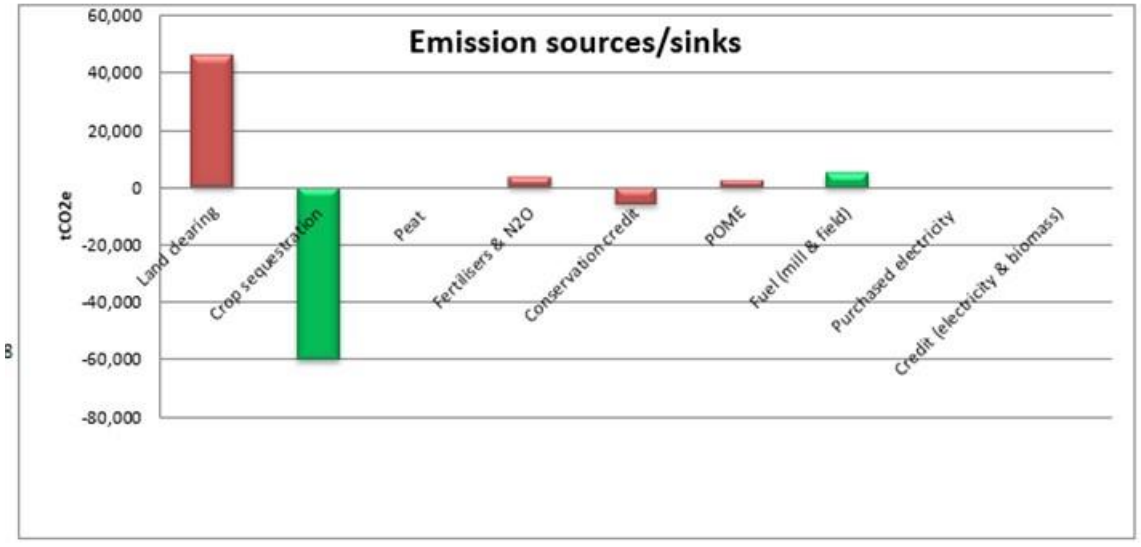


Figure 34. Summary of GHG emissions (tCO2e) for new development plans in the area of PT. United Agro Indonesia.

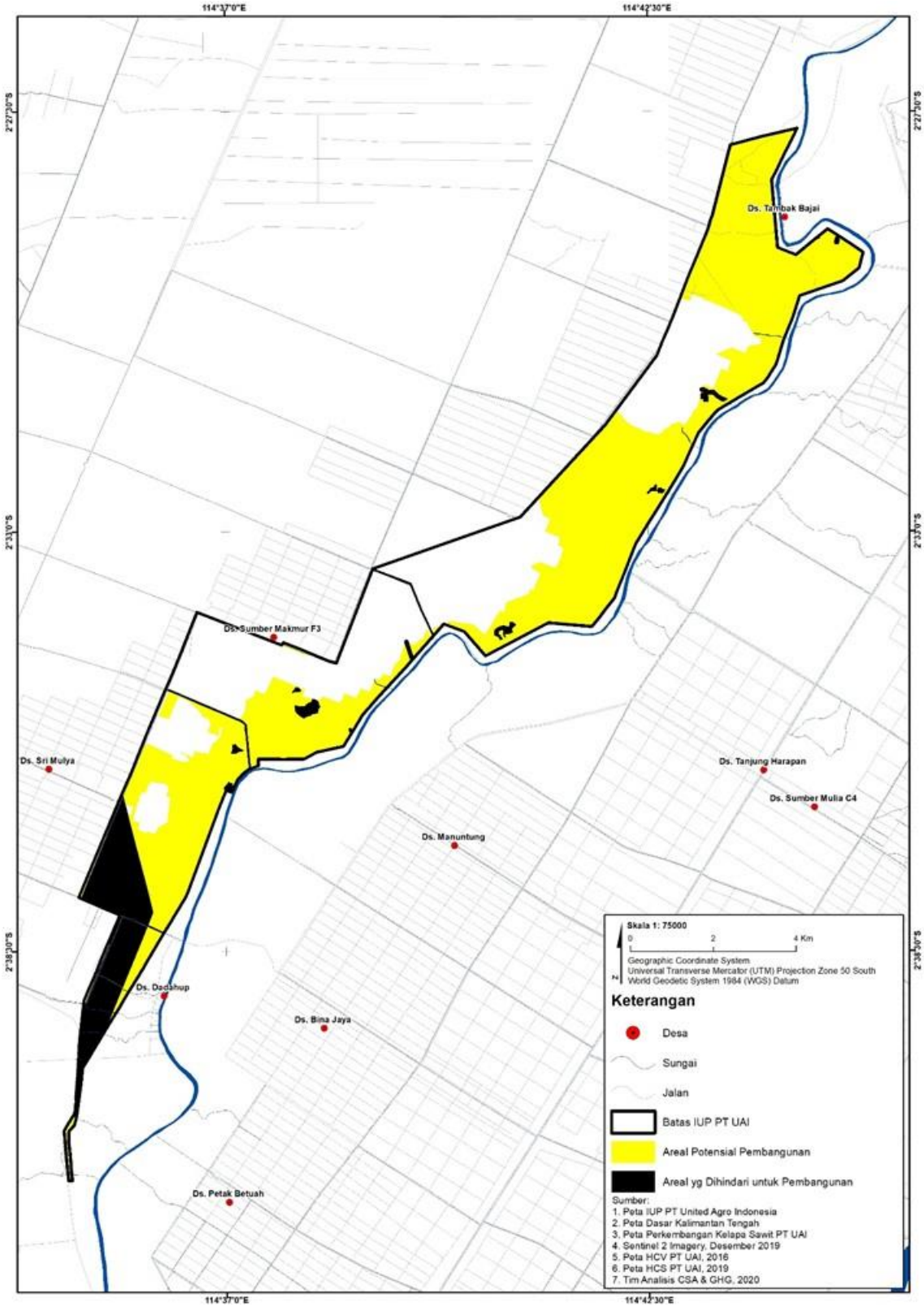


Figure 35. New Development Plan Map in the area of PT. United Agro Indonesia

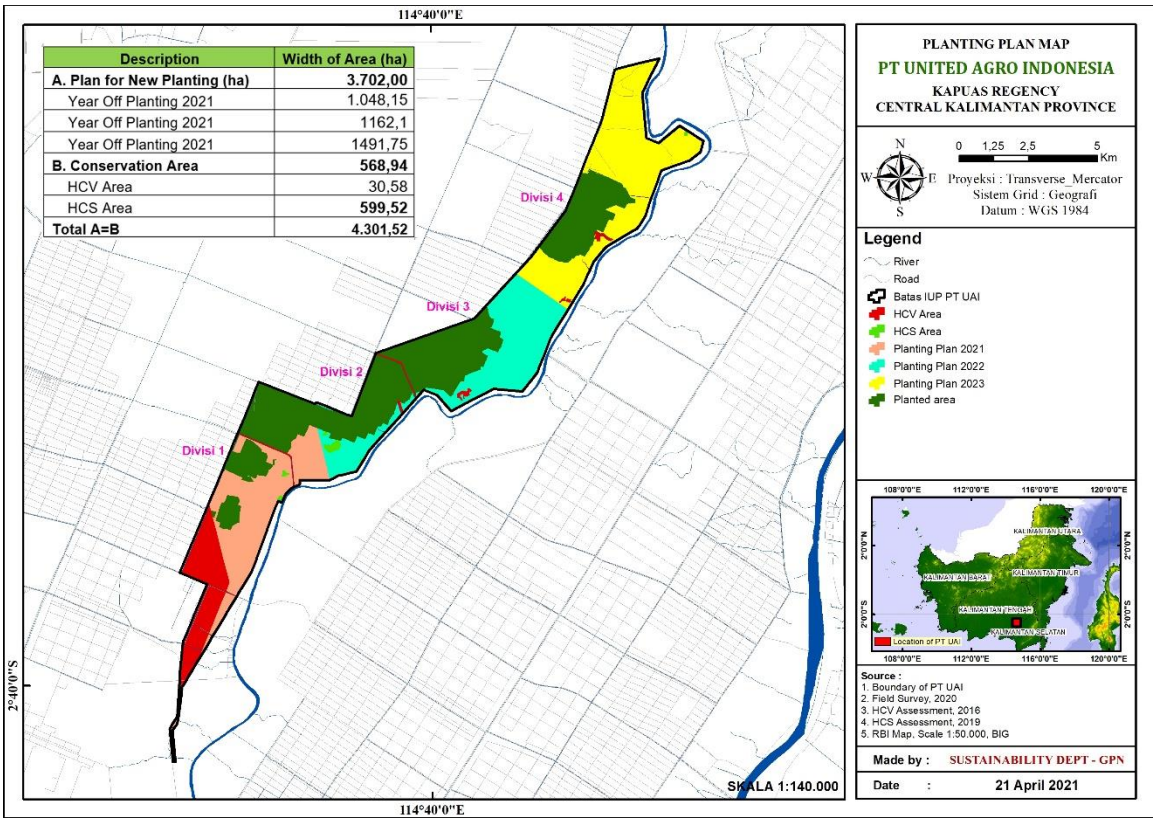


Figure 36. Planting Plan Map

3.5. LUC analysis

Additional information, PT UAI is the result of the acquisition from STH Group in January 2015

Historical Analysis of Land Use Change

Table 26. Historical Analysis of Land Use Change in the PT UAI

No.	Code	Land Cover	Luas (Ha)							
			Before November 1, 2005	November 1, 2005 - November 31, 2007	December 1, 2007 - December 31, 2009	January 1, 2010 – July 31, 2014	After Acquisition (January 2015)	July 31, 2014 – HCV identified (2016)	Ground truthing, 2019 (2016 - 2019)	2 Nov 2019 – 2 Nov 2020
1	SCH	Shrubs	0,80	329,01	336,59	65,43	1.116,10	1.355,41	1.355,41	1023,28
2	SSH	Swamp Shrubs	4.662,08	4.328,22	4.908,28	2.288,59	1.691,78	1.304,33	1.304,33	782,24
3	OPL	Oil Palm Plantation	-	-	0,13	2.446,70	2.446,70	2.446,70	2.446,70	2.446,70
4	BRL	Bareland	2.060,66	2.066,31	1.478,56	1.922,83	1.468,96	1.617,10	1.617,10	2.471,32
Total (Ha)			**6.723,55**	**6.723,55**	**6.723,55**	**6.723,55**	**6.723,55**	**6.723,55**	**6.723,55**	**6.723,55**

Raw land cover data (contingency matrix)

Tabel 27. Periode November 2005 – November 2007

Non-Corporate

	Landcover Class	November 2007			Total 2005
		BRL	SCH	SSH	
November 2005	BRL	1,133.69	329.01	597.96	2,060.66
	SCH	0.80	-	-	0.80
	SSH	931.81	-	3,730.26	4,662.08
	Total 2007	**2,066.31**	**329.01**	**4,328.22**	**6,723.55**

Tabel 28. Periode Desember 2007 – Desember 2009

Corporate

	Landcover Class	Desember 2009	Total 2007
		OPL	
Desember 2007	SCH	0.11	0.11
	SSH	0.02	0.02
	Total 2009	**0.13**	**0.13**

Non-Corporate

	Landcover Class	Desember 2009			Total 2007
		BRL	SCH	SSH	
Desember 2007	BRL	1,177.46	70.19	818.67	2,066.31
	SCH	62.51	266.40	-	328.90
	SSH	238.59	-	4,089.61	4,328.20
	Total 2009	**1478.56**	**336.59**	**4,908.28**	**6,723.55**

Tabel 29. Periode Januari 2010 – July 2014

Corporate

	Landcover Class	July 2014	Total 2010
		OPL	
Januari 2010	BRL	313,06	313,06
	OPL	0,13	0,13
	SCH	152,69	152,69
	SSH	1.977,56	1.977,56
	Total July 2014	**2.446,70**	**2.446,70**

Non-Corporate

	Landcover Class	July 2014			Total 2010
		BRL	SCH	SSH	
Januari 2010	BRL	1.039,83	16,14	106,53	1.162,50
	SCH	134,33	49,29	-	183,63
	SSH	748,66	-	2.182,06	2.930,72
	Total July 2014	**4.153,75**	**67,70**	**2.365,58**	**6.587,02**

Tabel 30. Periode After Acquisition (January 2015)

Corporate

	Landcover Class	After Acquitision (2015)	Total July 2014
		OPL	
July 2014	BRL	-	-
	OPL	2.446,70	2.446,70
	SCH	-	-
	SSH	-	-
	Total August 2015	**2.446,70**	**2.446,70**

Non-Corporate

	Landcover Class	After Acquisition (january 2015)			Total July 2014
		BRL	SCH	SSH	
July 2014	BRL	1.158,38	600,97	163,48	1.922,83
	SCH	9,21	56,22	-	65,43
	SSH	449,52	698,22	1.140,85	2.288,59
	Total August 2015	**1.617,10**	**1.355,41**	**1.304,33**	**4.276,84**

Tabel 31, Periode July 2014 – Assessment HCV (2016)

Corporate

	Landcover Class	Date of HCV assessment	Total July 2014
		OPL	
July 2014	BRL	-	-
	OPL	2.446,70	2.446,70
	SCH	-	-
	SSH	-	-
	Total Ha up to date of HCV assessment	**2.446,70**	**2.446,70**

Non-Corporate

	Landcover Class	Date of HCV assessment			Total July 2014
		BRL	SCH	SSH	
July 2014	BRL	1.158,37	600,97	163,48	1.922,82
	SCH	9,21	56,22		65,43
	SSH	449,52	698,22	1.140,85	2.288,59
	Total Ha up to date of HCV assessment	**1.617,10**	**1.355,41**	**1.304,33**	**4.276,84**

Tabel 32. Periode Assessment HCV (2016) – Groundtruth (2019)

Corporate

	Landcover Class	Groundtruth 2019	Total Ha up to date of HCV assessment (2016)
		OPL	
2016	OPL	2.446,70	2.446,70
	Groundtruthing 2019	**2.446,70**	**2.446,70**

Non-Corporate

	Landcover Class	Groundtruth 2019			Total Ha up to date of HCV assessment (2016)
		BRL	SCH	SSH	
2016	BRL	1,204.82	20.96	391.32	1,624.23
	SCH	178.31	1,177.10	-	1,336.53
	SSH	151.40	-	1,152.93	1,136.11
	Groundtruthing 2019	**1,534.53**	**1,198.06**	**1,544.25**	**4,276.84**

Tabel 33. Groundtruth (2019) – Last Period (2 Nov 2019 – 2 Nov 2020)

Corporate

	Landcover Class	2 Nov 2019 – 2 Nov 2020	Total (ha)
		OPL	
Groundtruth July 2019	OPL	2.446,70	2.446,70
	2 Nov 2019 – 2 Nov 2020	**2.446,70**	**2.446,70**

Non-Corporate

	Landcover Class	2 Nov 2019 – 2 Nov 2020			Total (ha)
		BRL	SCH	SSH	
Groundtruth July 2019	BRL	1.302,40	210,92	21,21	2.471,32
	SCH	514,09	683,97	-	1.023,28
	SSH	654,83	128,39	761,03	782,24
	2 Nov 2019 – 2 Nov 2020	**2.471,32**	**1.023,28**	**782,24**	**4.276,84**

In the Groundtruth period (July 2019) - Last Period (17 Nov 2019), due to land fires that occurred, resulting in very significant changes in land cover. Generally, fires that occur in the PT UAI location permit area are caused by burning of land by gelam seekers and clearing of community fields. The area that is burned is the previous cover, namely shrubs, swamp shrubs and bareland. These areas generally fall within the areas proposed for new planting. Especially for HCV / HCS areas that have been identified and have been burned, rehabilitation will be carried out and not opened for oil palm planting.

Environmental Remediation

Table 34. Potential of remediation in each obligation period in PT. United Agro Indonesia

Period of clearance	Riparian Buffer (ha)
Groundtruth (2019) – November, 2019	-
HCV identified (2016) – Groundtruth (2019)	-
After July 31, 2014 – HCV identified (2016)	23,51
January 1, 2010 – July 31, 2014	6,66
December 1, 2007 - December 31, 2009	-
November 1, 2005 - November 31, 2007	-
Total (ha)	**30,17**

LUCA result before multiplying with vegetation coefficient

Table 35. The results of LUCA calculations in PT. United Agro Indonesia before multiplied by the coefficient of vegetation

Land cover class	Vegetation Coefficient	Nov 1, 2005 to Nov 30, 2007	Dec 1, 2007 to Dec 31, 2009	Jan 1, 2010 to July 31, 2014	After Acquisition (January 2015)	After July 31, 2014 to – HCV identified (2016)	HCV identified (2016) – Groundtruth (2019)	2 Nov 2019 – 2 Nov 2020
One or more land cover classes which fulfill the criterion of vegetation coefficient 1.0	1.0	-	-	-	-	-	-	-
One or more land cover classes which fulfill the criterion of vegetation coefficient 0.7	0.7	-	-	-	-	-	-	-
One or more land cover classes which fulfill the criterion of vegetation coefficient 0.4	0.4	-	-	-	-	-	-	-
One or more land cover classes which fulfill the criterion of vegetation coefficient 0.0	0	-	0,13	2.446,57	-	-	-	-
Total (sum of rows)		-	0,13	2.446,57	-	-	-	-

Final compesation liability

Prediction of the amount of compensation is calculated using the area of land clearing that occurred in each period of liability multiplied by the vegetation coefficient of land cover in 2005 (Baseline), presented in Table 36.

Table 36. LUCA calculation results in the area of PT. United Agro Indonesia after being multiplied by the coefficient of vegetation

Period of land clearance	Land controlled by a non-member at time of clearance	Land controlled by a RSPO member at time of clearance. This Includes land acquired from other RSPO members
2 Nov 2019 – 2 Nov 2020	0	-
HCV identified (2016) – Groundtruth (2019)	0	-
After July 31, 2014 – HCV identified (2016)	0	-
January 1, 2010 – July 31, 2014	0	-
December 1, 2007 - December 31, 2009	0	-
November 1, 2005 - November 31, 2007	No additional conservation liability	-
Total (ha)	0	-

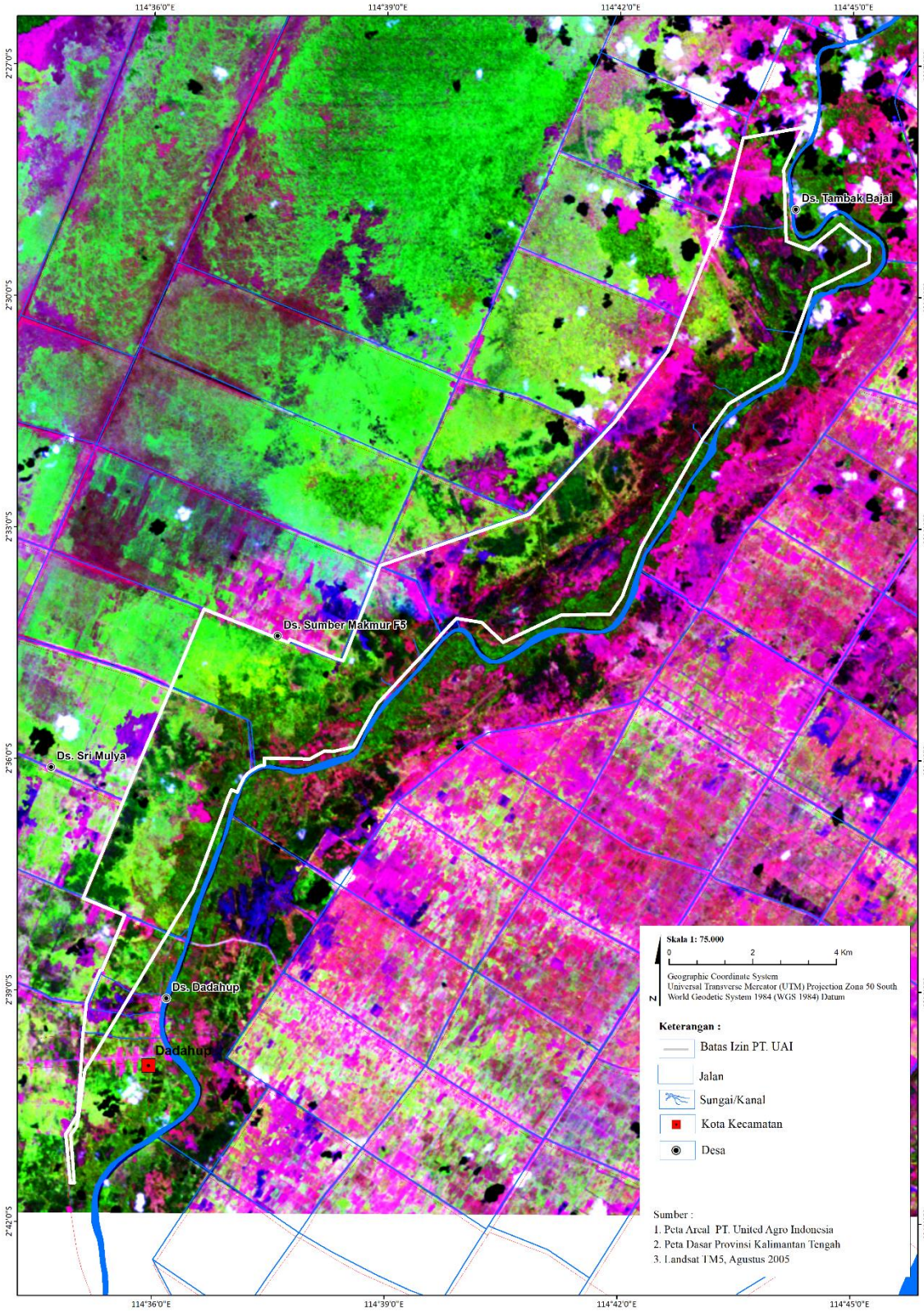


Figure 37. Landsat Image Period - *Before November 1, 2005 (Landsat TM5 Imagery, August 2005)*

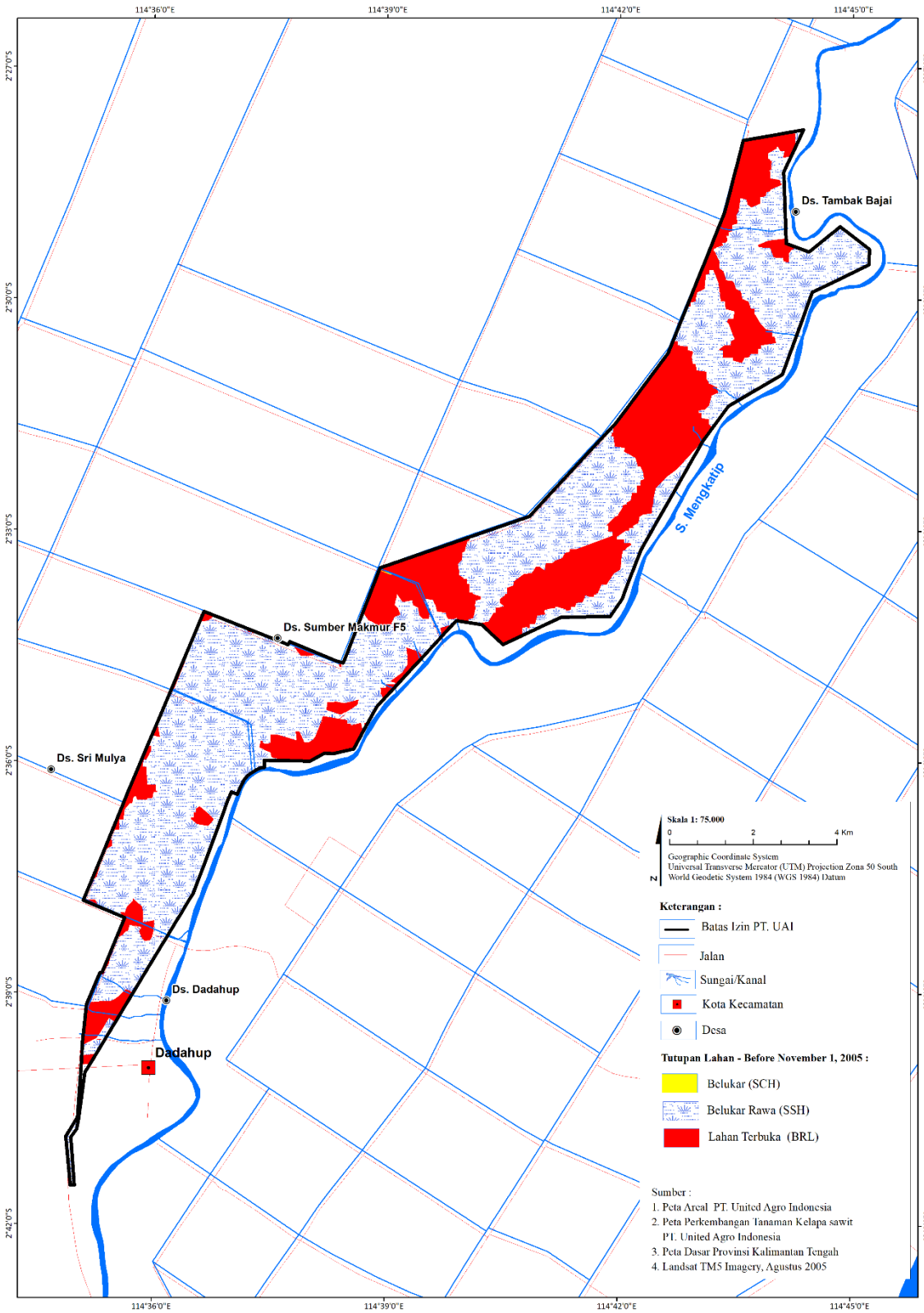


Figure 38. Land cover map - *Before November 1, 2005 (Landsat TM5 Imagery, August 2005)*

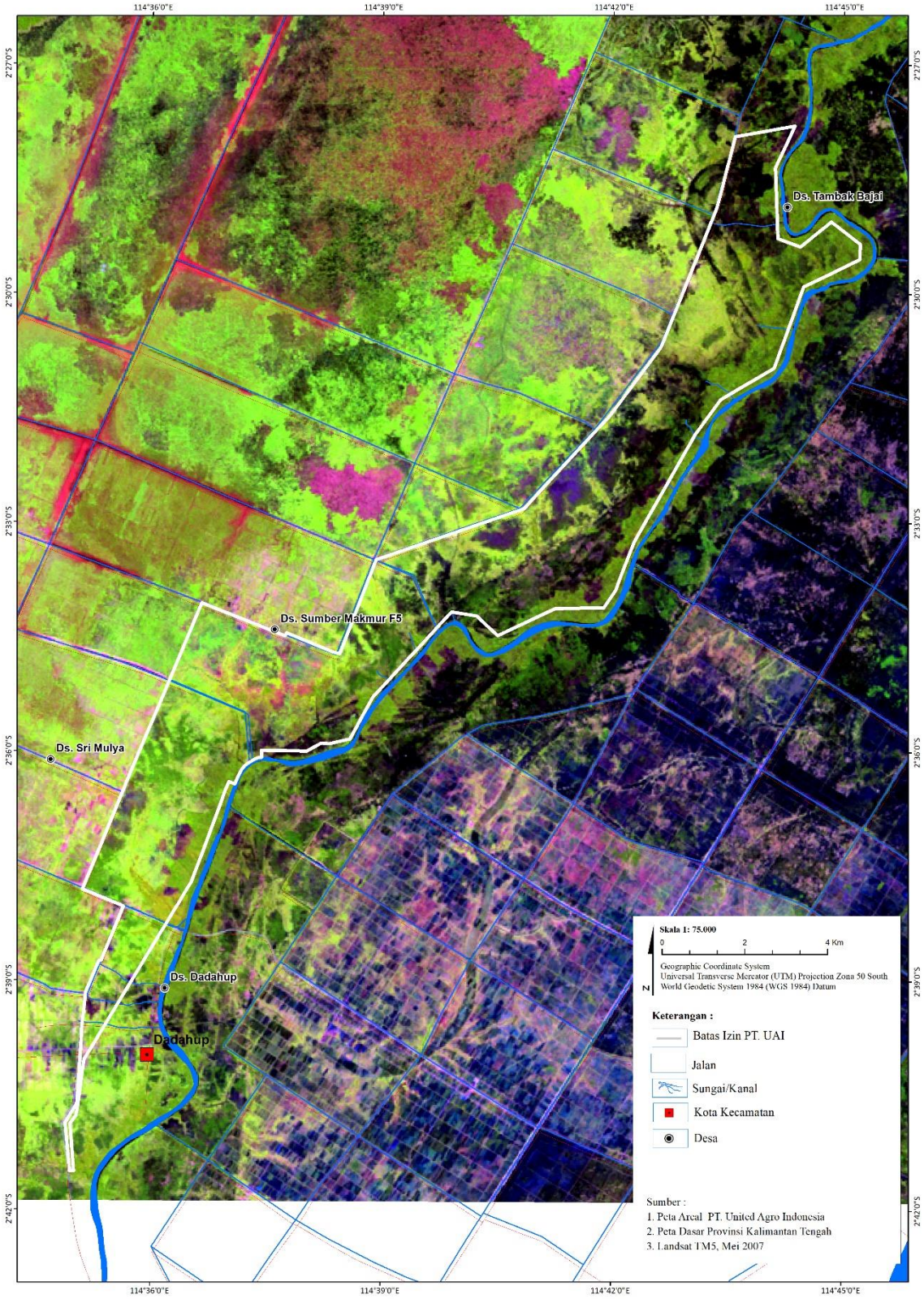


Figure 39. Landsat Image Period - *November 1, 2005 - November 31, 2007* (Landsat TM5 Imagery, May 2007)

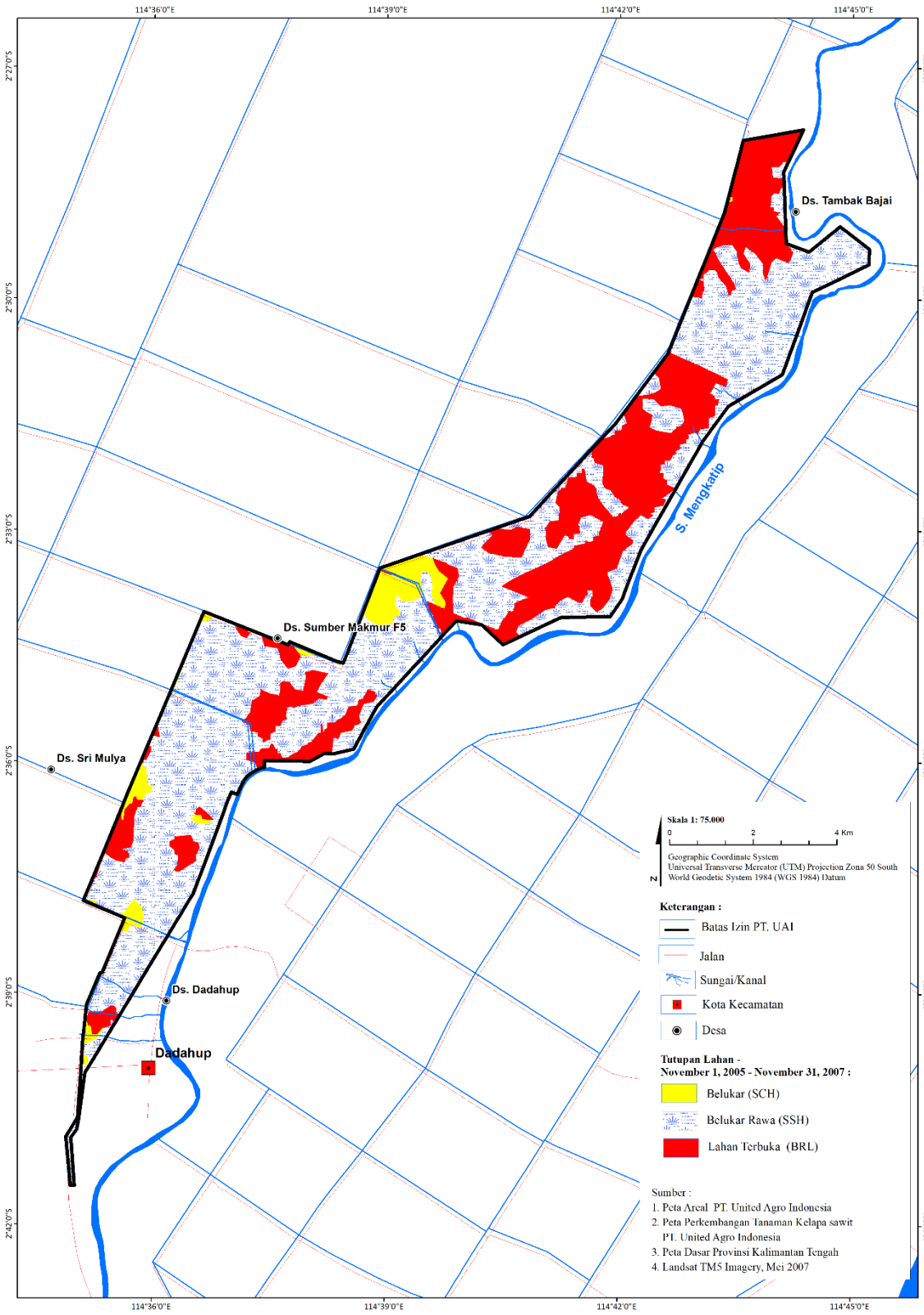


Figure 40. Land cover map - *November 1, 2005 - November 31, 2007* (Landsat TM5 Imagery, May 2007)

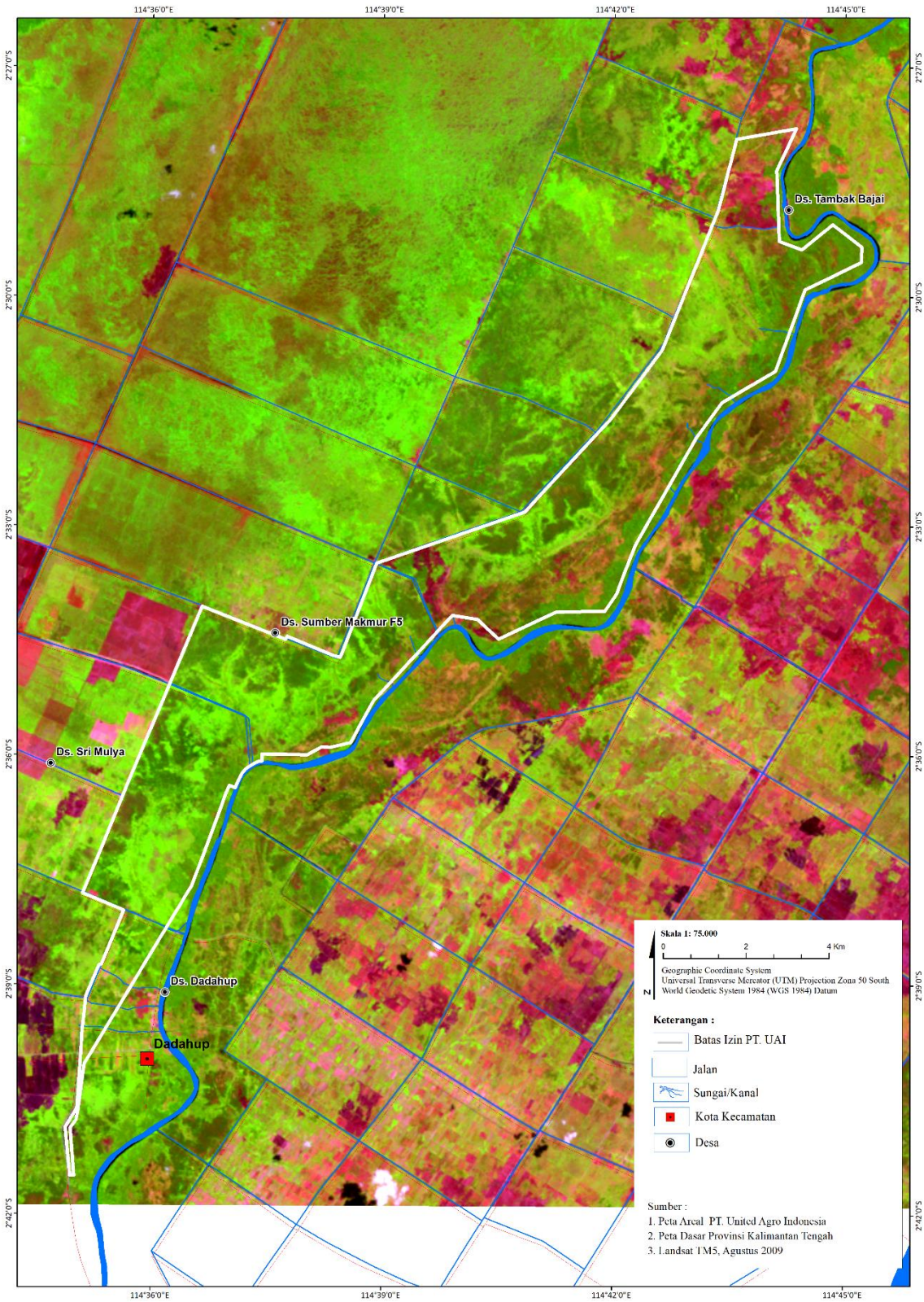


Figure 41. Landsat Image Period - *December 1, 2007 - December 31, 2009* (Landsat TM5 Imagery, August 2009)

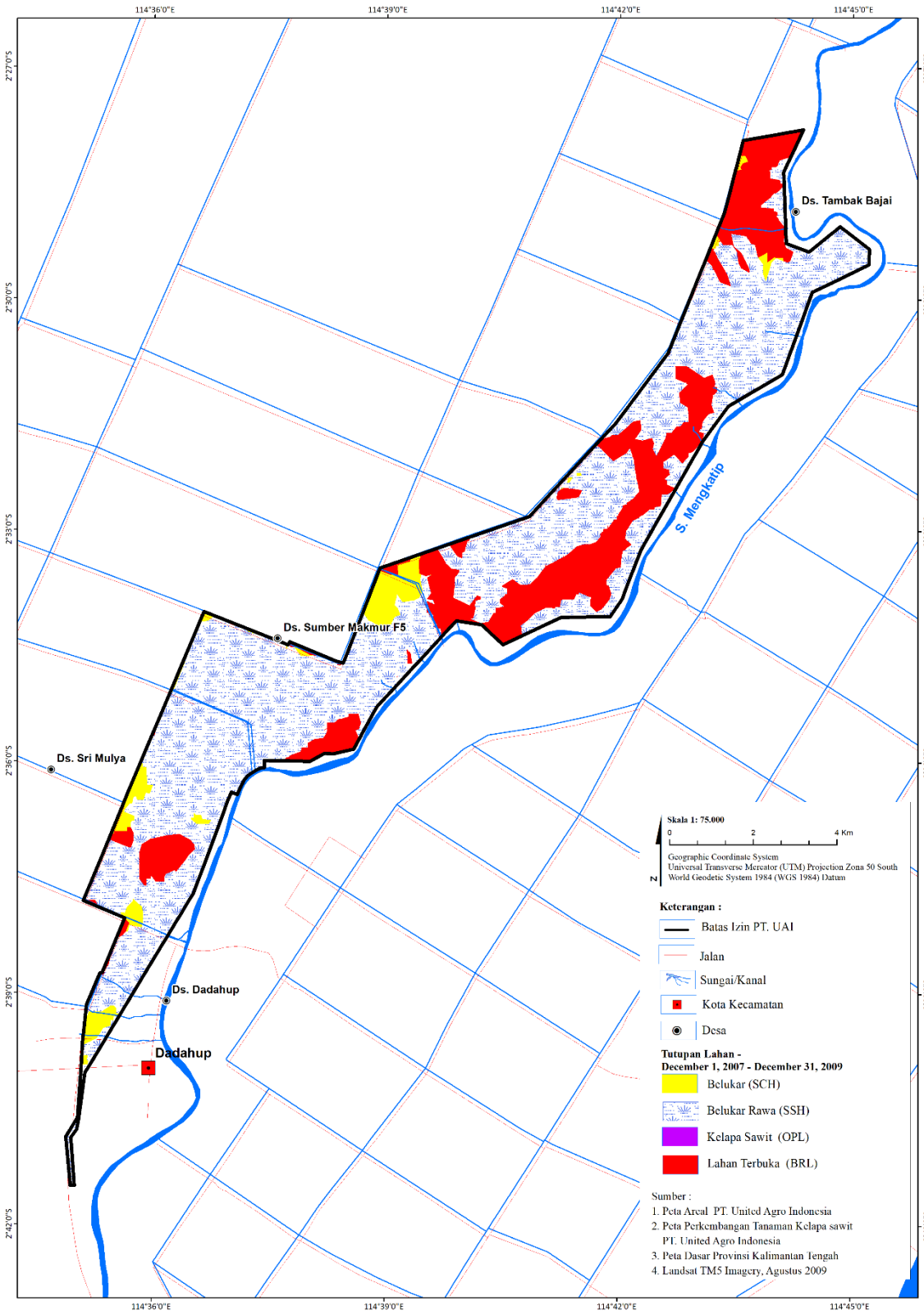


Figure 42. Land cover map - *December 1, 2007 - December 31, 2009* (Landsat TM5 Imagery, August 2009)

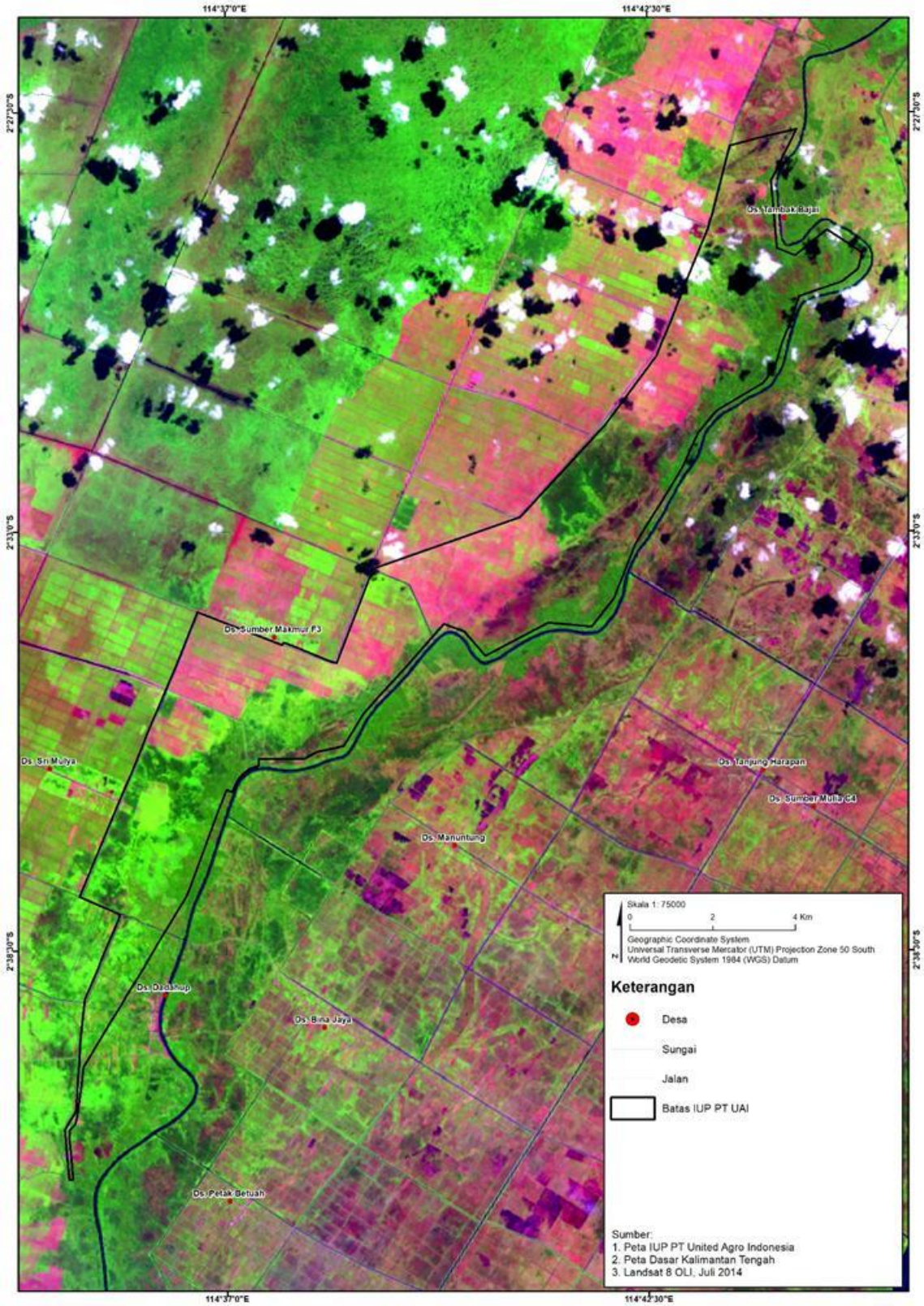


Figure 43. Landsat Image Period - *January 1, 2010 – May 9, 2014* (Landsat 8 Imagery, July 2014)

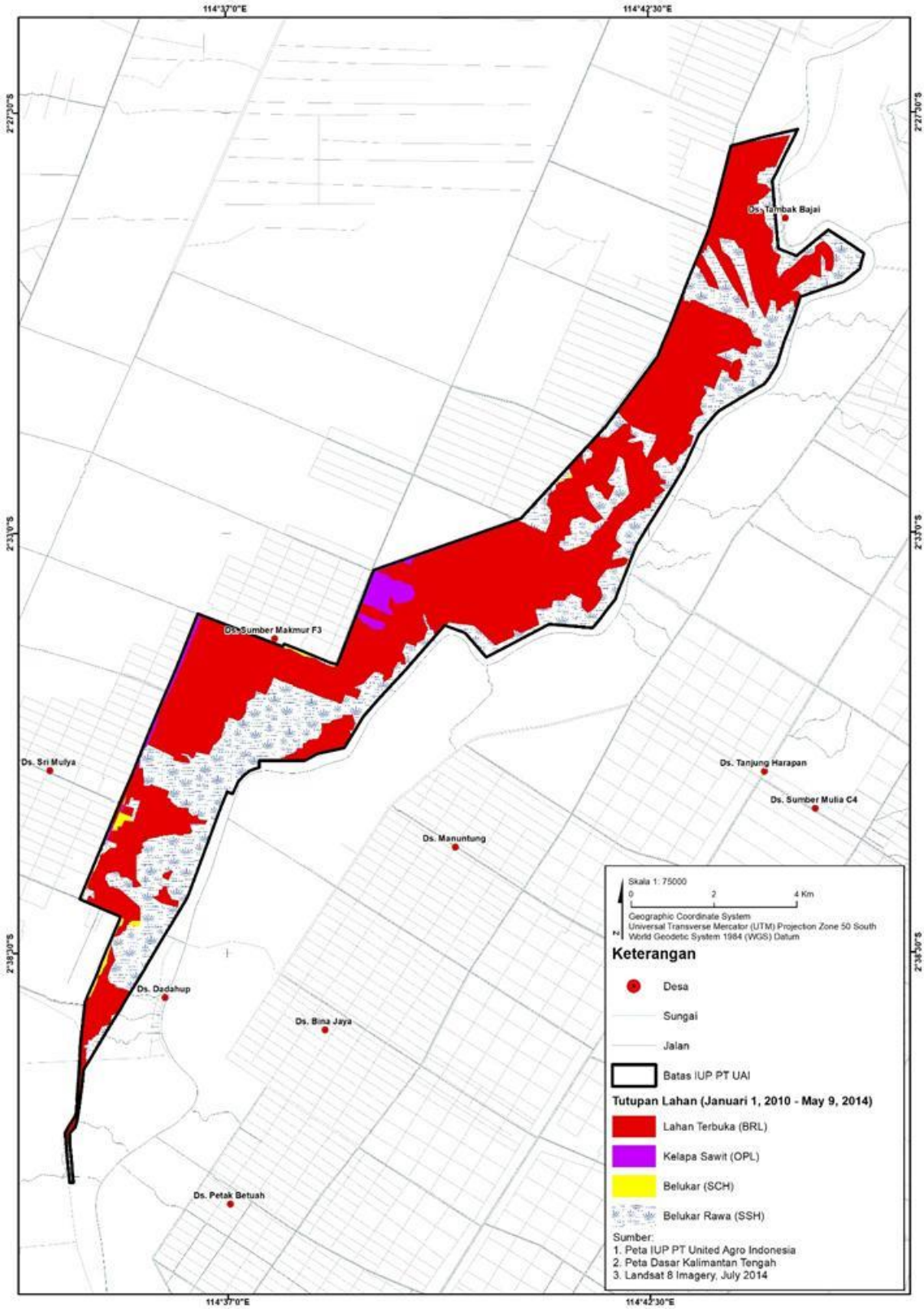


Figure 44. Land cover map - *January 1, 2010 – May 9, 2014* (Landsat 8 Imagery, July 2014)

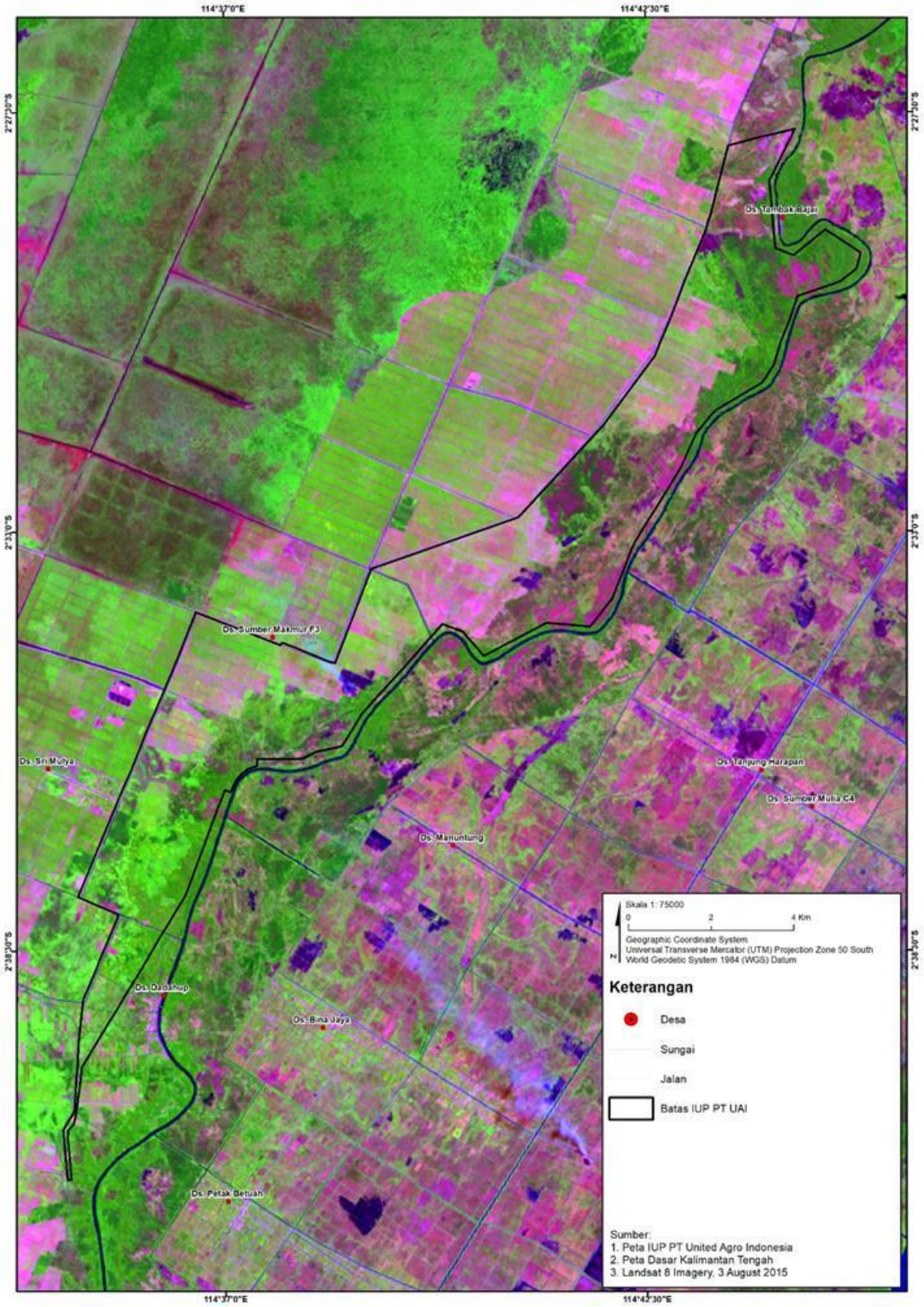


Figure 45. Landsat Image Period *After Acquisition (January 2015)* (Landsat 8 Imagery, August 2015)

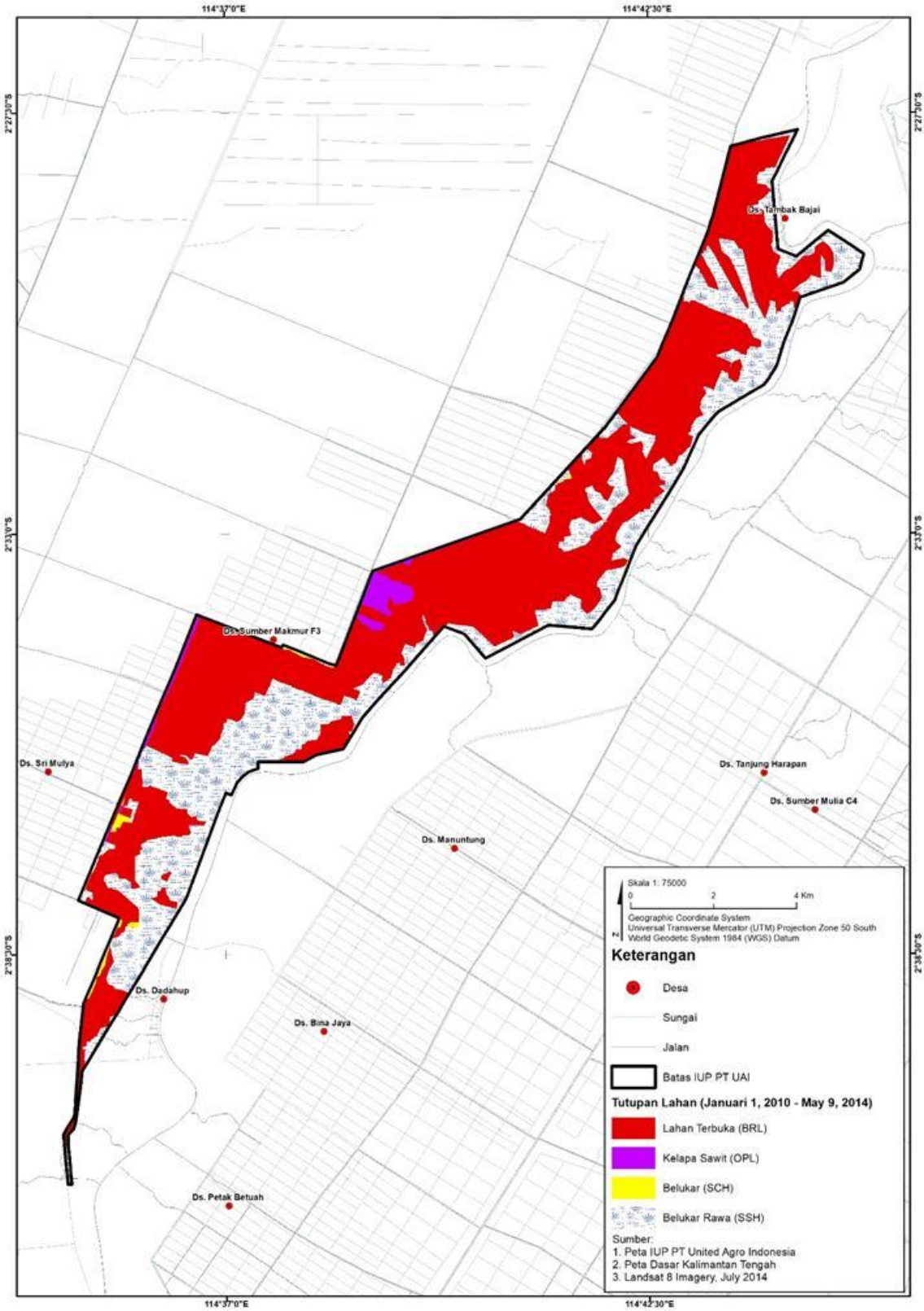


Figure 46. Land cover map - *After Acquisition (January 2015)* (Landsat 8 Imagery, August 2015)

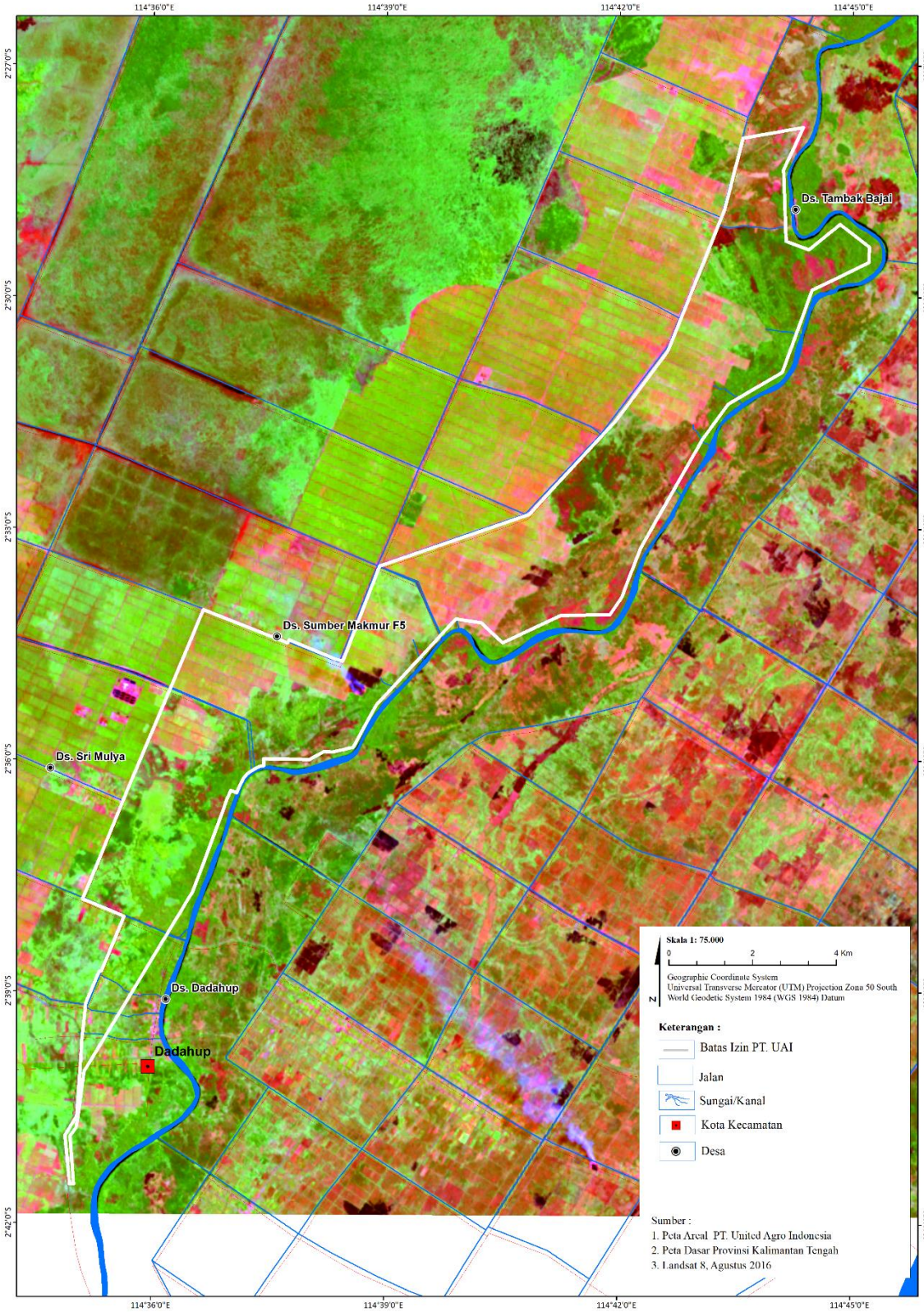


Figure 47. Landsat Image Period *May 9, 2014 – HCV Identified (2016) (*Landsat 8 Imagery, August 2016)

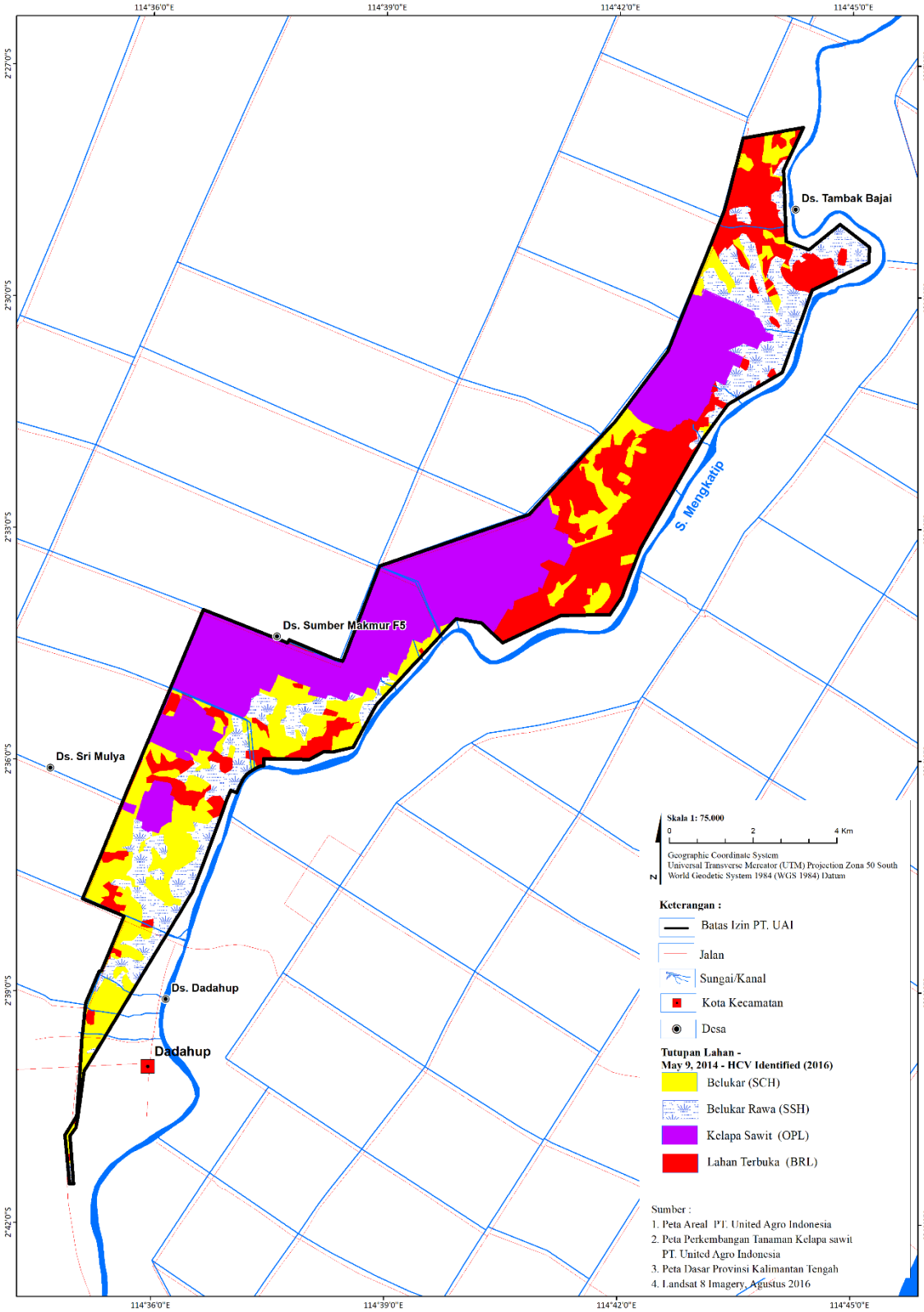


Figure 48. Land cover map - *May 9, 2014 – HCV identified (2016) (*Landsat 8 Imagery, August 2016)

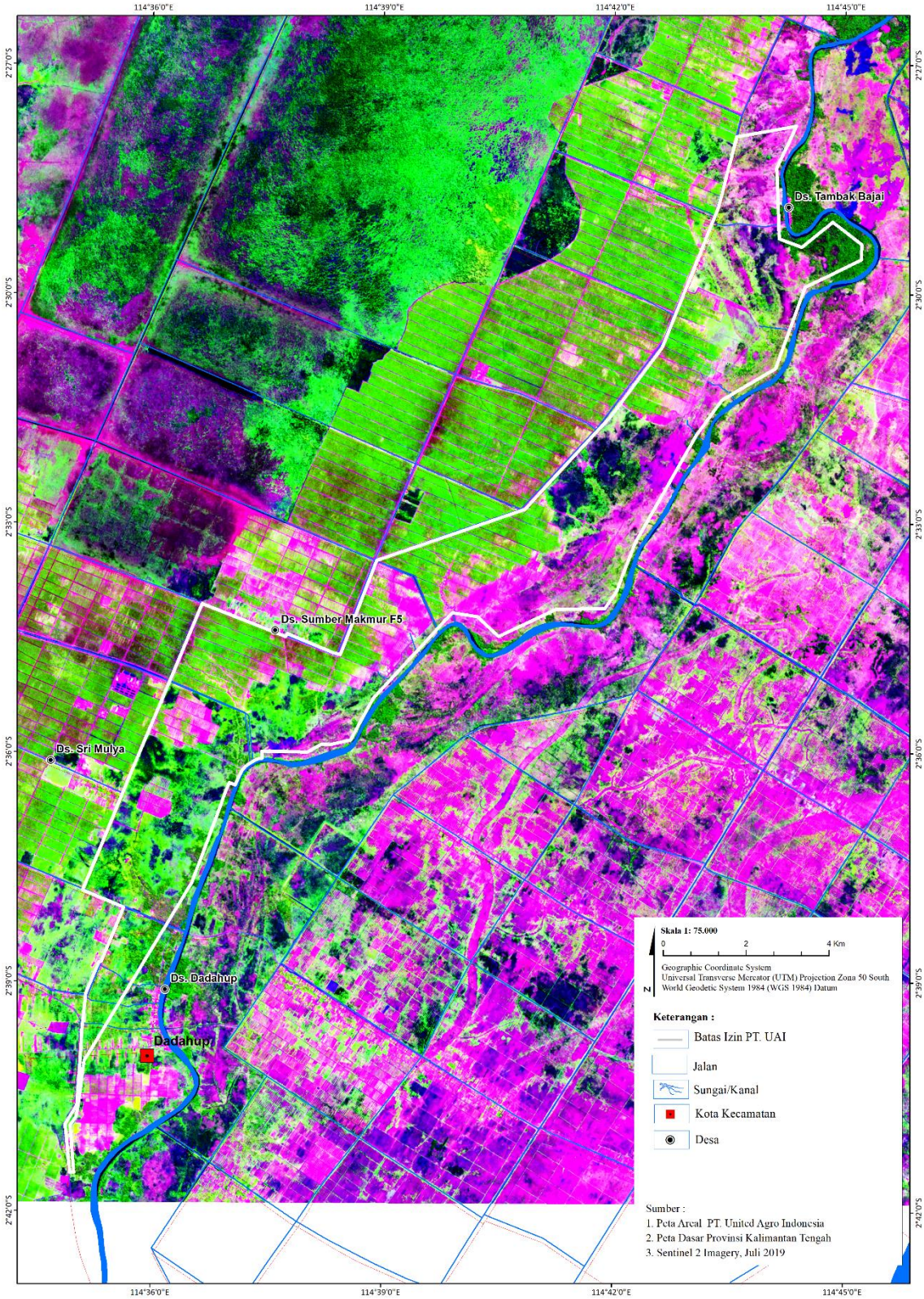


Figure 49. Sentinel 2 - *Ground truthing, 2019* (Sentinel 2 Imagery, July 2019)

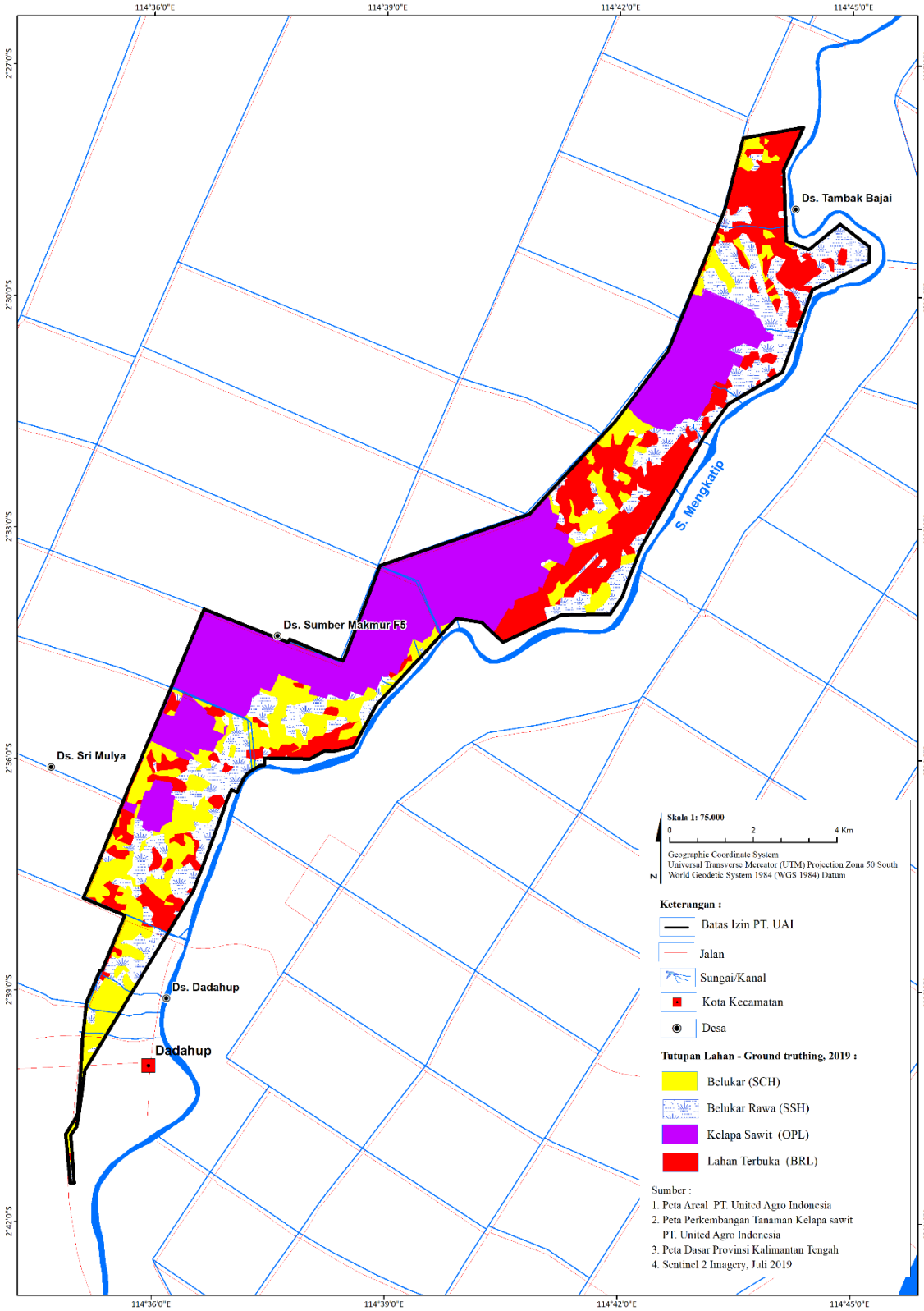


Figure 50. Land cover map - *Ground truthing, 2019* (Sentinel 2 Imagery, July 2019)

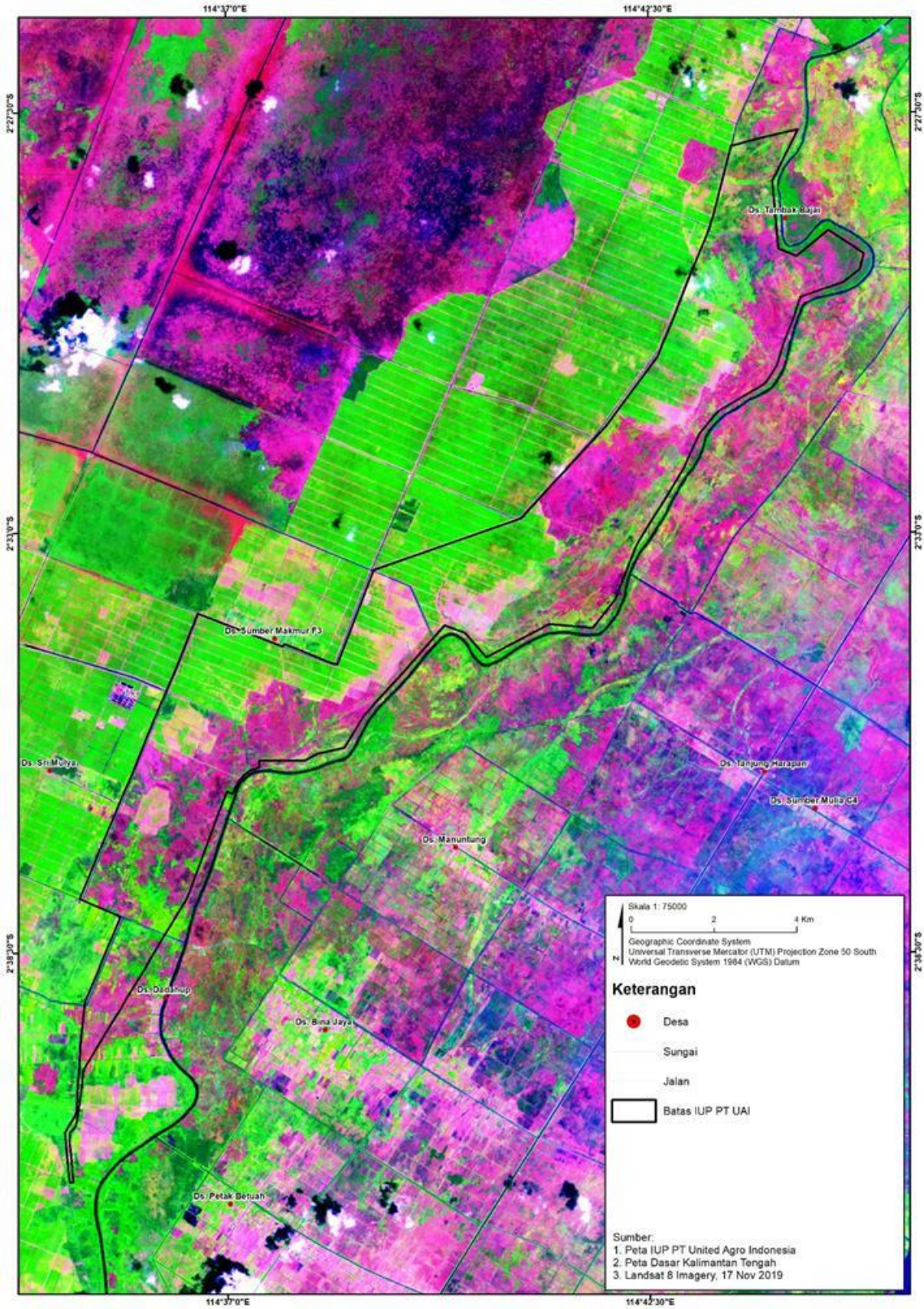


Figure 51. Sentinel 2 - 2 Nov 2019 - 2 Nov 2020 (Landsat 8 Imagery, 17 Nov 2019)

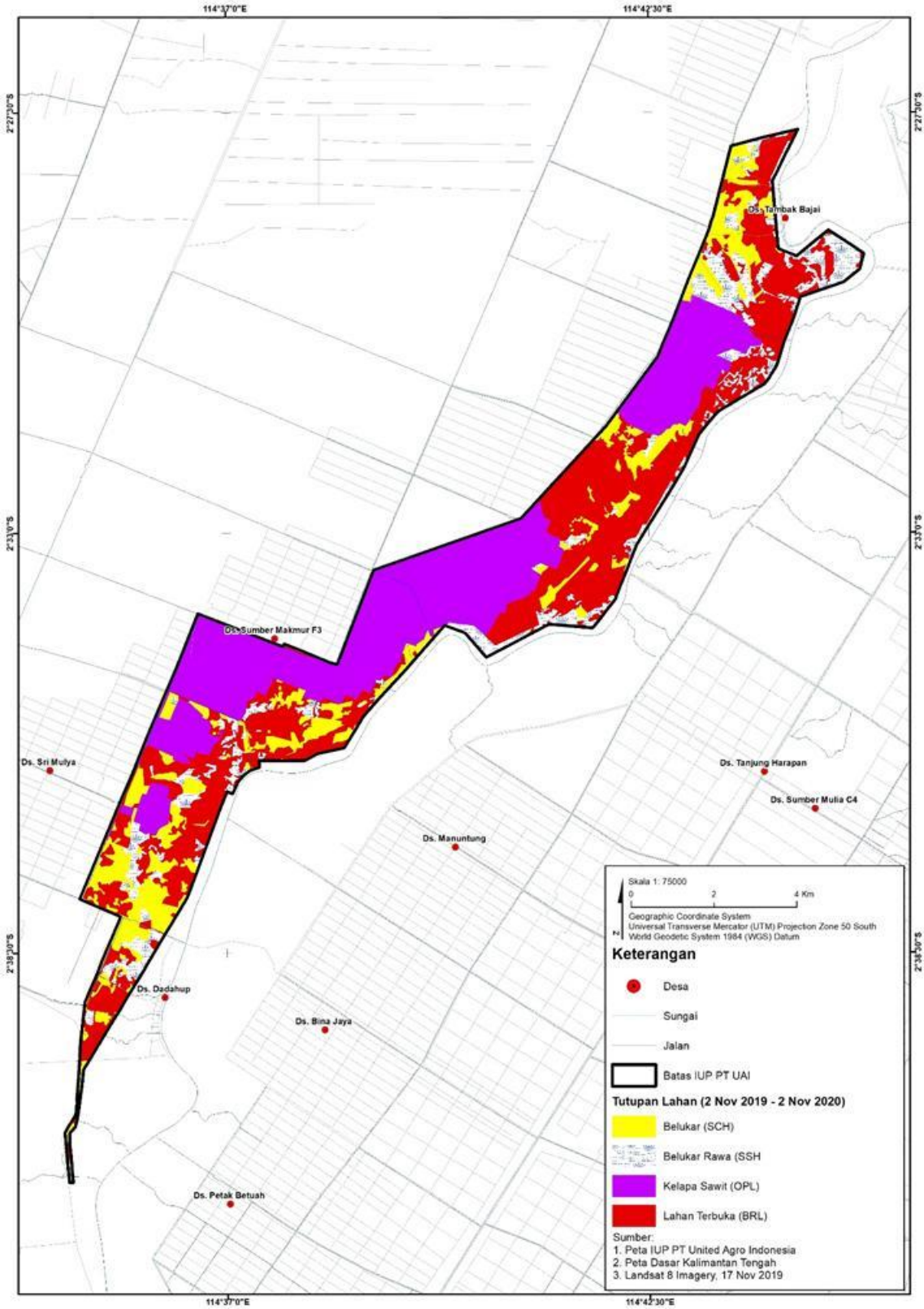


Figure 52. Land cover map (Landsat 8 Imagery, 17 Nov 2019)

3.6. FPIC process

3.6.1. FPIC Phase 1 - Stakeholder Identification

Stakeholders and authorities

Based on the RSPO FPIC 2018 Toolkit, community involvement includes formal structures (Subvillage / village government as well as traditional instruments, and community leaders). Strive to involve broader community groups through extensive and inclusive consultations to ensure which organizations and individuals are considered by the community as their own chosen representatives.

Rightsholder

The rights holders referred to in the FPIC study are those directly affected by the activities of PT UAI. These rights holders consist of land owners, land users, and land tenants.

Land ownership by the community around PT UAI varies in size. These lands are recognized traditionally although not yet certified, both SKT (Land Certificate) and SPPT (Land Ownership Declaration). The difference in land area is the result of differences in the work of each community in opening land, so that people who are able to open more land will have more extensive land / land. The method for acquiring land area for residents around PT UAI is presented in Table 37.

Table 37. How to acquire land extend conducted by residents around PT UAI

No	Village	Land Ownership of Citizens in the Concession Area
1.	Sumber Alaska	- Land ownership was given by the government during the 1998 transmigration process. - The land is divided into business land and yard. - Land tenure is proven by certificates
2.	Sri Mulya	- Land ownership was given by the government during the 1998 transmigration process. - The land is divided into business land and yard. - Land tenure is proven by certificates
3.	Sumber Makmur	- Land ownership was given by the government during the 1998 transmigration process. - The land is divided into business land and yard. - Land tenure is proven by certificates
4.	Dadahup	- The majority of the residents 'land tenure is from their former ancestors' claim. - The extent of the residents' land within the concession is largely unmeasured - There is no evidence of land ownership (SKT / SPPT)
5.	Tambak Bajai	- The majority of the residents 'land tenure is from their former ancestors' claim. - The extent of the residents' land within the concession is largely unmeasured - There is no evidence of land ownership (SKT / SPPT)

Source: FPIC Team Survey, 2019

Land use within PT UAI's concession area is almost the same. The land in the concession area is used by residents for agriculture, plantations and farming. Some types of plants planted by

communities in the concession area, mainly rubber. In addition, there are also forested areas that are dominated by gelam trees. In the gelam forest area, people take non-timber forest products in the form of rattan (Table 38).

Table 38. Land Utilization by Residents Around PT UAI

No	Village	Land Use by Residents in Concession Areas
1.	Sumber Alaska	- Types of plants cultivated, such as rubber, palm, vegetables
2.	Sri Mulya	- Types of plants cultivated, such as rubber, palm, vegetables
3.	Sumber Makmur	- Types of plants cultivated, such as rubber, palm, vegetables
4.	Dadahup	- Types of plants cultivated, such as rubber, palm oil, vegetables, gelam forest, rattan
5.	Tambak Bajai	- Types of plants cultivated, such as rubber, palm oil, vegetables, gelam forest, rattan

Sumber: Survei Tim FPIC, 2019

Authority

The identification of authority stakeholders consists of individual representatives and institutional or organizational representatives in the community. Individual representatives may consist of representatives from indigenous peoples or local communities. In general there are 2 ethnic groups in the villages around PT UAI. In the original villages (Dadahup and Tambak Bajai), the majority ethnic group was the Dayak Kapuas. Meanwhile, the majority of transmigration areas are Javanese / Sundanese (Table 39). The values of the Dayak community life such as language, beliefs and similarities with customs are still the character of the community.

Table 39. Ethnic Distribution in the Villages Around PT UAI

Village	Ethnic	Percentage (%)
Sumber Alaska	Dayak	20
	Banjar	20
	Jawa	60
Sri Mulya	Jawa	10
	Sunda	50
	Banjar	20
	Dayak	20
Sumber Makmur	Jawa dan Bali	10
	Dayak	60
	Banjar	30
Dadahup	Dayak	80
	Banjar	15
	Lainnya	5
Tambak Bajai	Dayak Kapuas	100

From Table, it can be seen that the representative authority of certain ethnic / ethnic groups becomes important in FPIC activities.

Village / Subvillage Representative Body

In identifying the representative institutions in the village / Subvillage, reference can be used as in Figure 53.

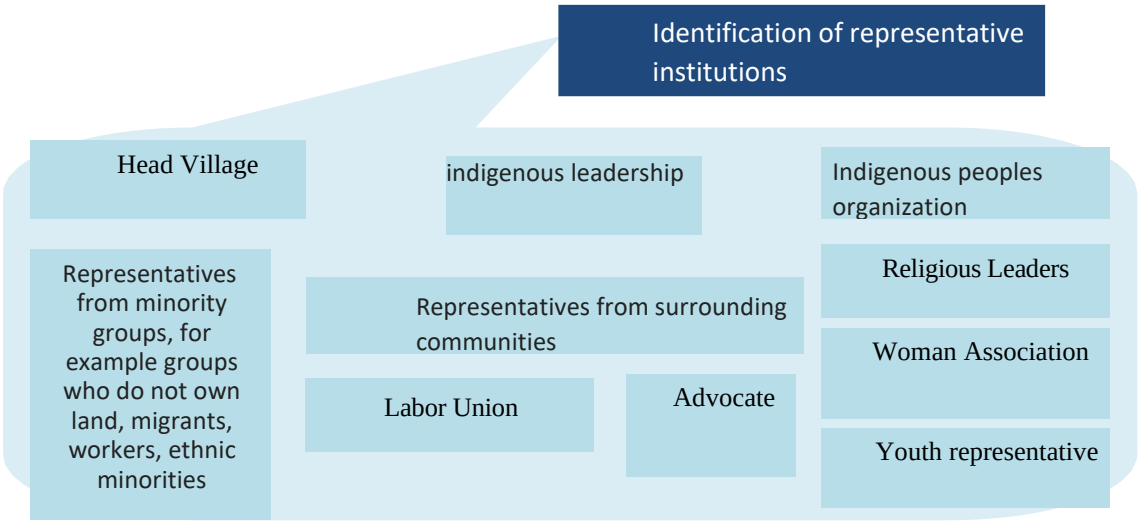


Figure 53. Identification of Representative Institutions

Some community institutions in the villages around PT UAI consist of village officials, BPD (Village Consultative Body), LPM (Community Empowerment Institute), Traditional Mantir, PKK (Empowerment and Family Welfare), Posyandu (Integrated Service Post).

The process of identifying stakeholders from representatives of village institutions begins with determining positions / positions that have a central role in the village that has influence in the community, then an analysis of the strength of stakeholder influence with the mastery of access to natural resources, as well as the potential for conflict and collaboration between stakeholders. In connection with the plan to open a plantation by PT UAI, several parties have been identified, including the village head, customary leader, RT administrator, RW, village government officials, community leaders, religious leaders, and so on. In detail the identification of stakeholders from the representatives of village institutions is as follows:

Table 40. List of Authorities from Representatives of Village Institutions

No	Name	Position	Organization/ Social group
1.	Suparjo	Sumber Alaska Head Village	Village Government
2.	Herison	Sri Mulya Head Village	Village Government
3.	Losmanto	Sumber Makmur Head Village	Village Government
4.	Gunawan, SPd	Dadahup Head Village	Village Government
5.	Guset	Tambak Bajai Head Village	Village Government

Source: Dadahup Subdistrict in Figures 2019

The list of Authorities from the Village Institution Representatives above is very dependent on the conditions and dynamics of the surrounding community. The list is limited to the current conditions of the social impact assessment. The identification of stakeholders is now important for the priority management of social impacts and risks going forward. However, those who are not included in the authority of the representatives of village institutions do not mean that they are less important and do not need to be included in the management of social aspects, only in terms of different priorities.

Figure 54. The process of identifying stakeholders and key issues, carried out through a participatory process in the field

3.6.2. FPIC Phase 2 - Forming Working Groups with Parties

After the community agrees to follow the entire FPIC stage in stage 1, the next step is the establishment of a working group. This working group will follow the whole process to the end, and will also be responsible if there is a dispute in the future. At the time of the FPIC study it was expected that there would be some form of a working group.

From the FGD results and interviews with several community leaders, it is proposed that if the company has several LAND COMPENSATION or GRTT activities, land measurement, High Carbon Stock activities, at least involve these figures with the involvement of landowners. In addition, to facilitate the process of land acquisition, it is necessary to form a kind of land acquisition team consisting of: Head of Village, BPD, Head of RT, Head of RW, and Land Owners. This working group can be referred to as the Village Team. The village team was also prepared for the implementation of a participatory mapping process.

3.6.3. FPIC Phase 3 - Mapping Community Rights through Participatory Mapping

The next stage of FPIC is to identify the existence of plans to open oil palm plantations that will be built, whether it impacts on the rights of the community that was before the company opened. These principles and criteria require two stages that apply, namely by studying community land tenure systems and through participatory mapping.

Participatory mapping is done to identify important areas that are protected by the community because they contain cultural, historical, spiritual elements, or as a source of livelihood and

identification of land use. Participatory mapping was also carried out to identify landowners in the PT UAI concession area. Stages done in Participatory mapping:

a) Compilation of a participatory mapping activity plan
b) Prepare socialization materials such as HCV, HCS, SEIA, and FPIC exposure materials to be communicated to the community
c) Ask one of the community leaders to sketch a village map based on a map of PT SMA oil palm plantation concession area. This village sketch map contains:
   - Village spatial structure with information on the existence of rice farming areas, plantations (rubber & palm oil), roads, forests, etc.
   - Indicative administrative boundaries between villages.
d) Determine the location of land use or utilization within PT UAI concession area by residents which includes:
   - Location of land used by the community to fulfill basic needs, socio-economic, socio-cultural, religious needs, ceremonial needs, etc.
   - Location of residential areas
   - Location of agricultural or plantation areas whether subsidized or commercial.
   - Village development reserve land that will be used for agriculture / plantation activities.
   - Customary jointly owned land and customary land whose ownership is personal.
   - Religious land that is used for religious activities or beliefs
e) If there is information on land use that is not known with certainty, it will consult with local community leaders (informants).
f) Then the sketch-based mapping data is then processed and then overlaid with a GIS (land cover) map as a participatory draft map.
g) Finalize participatory maps with GIS-based mapping collaboration.

In its implementation, direct participatory mapping uses a map of the work area and the community is asked to draw the important area above the map provided (Figure 55) and Figure 13. Then from the participatory map sketch then overlaid with GIS related to the land cover condition of the PT concession area. UAI The results of participatory sketch map overlays with GIS are shown in Figure 56

Figure 55. Participatory mapping process in the villages around PT UAI

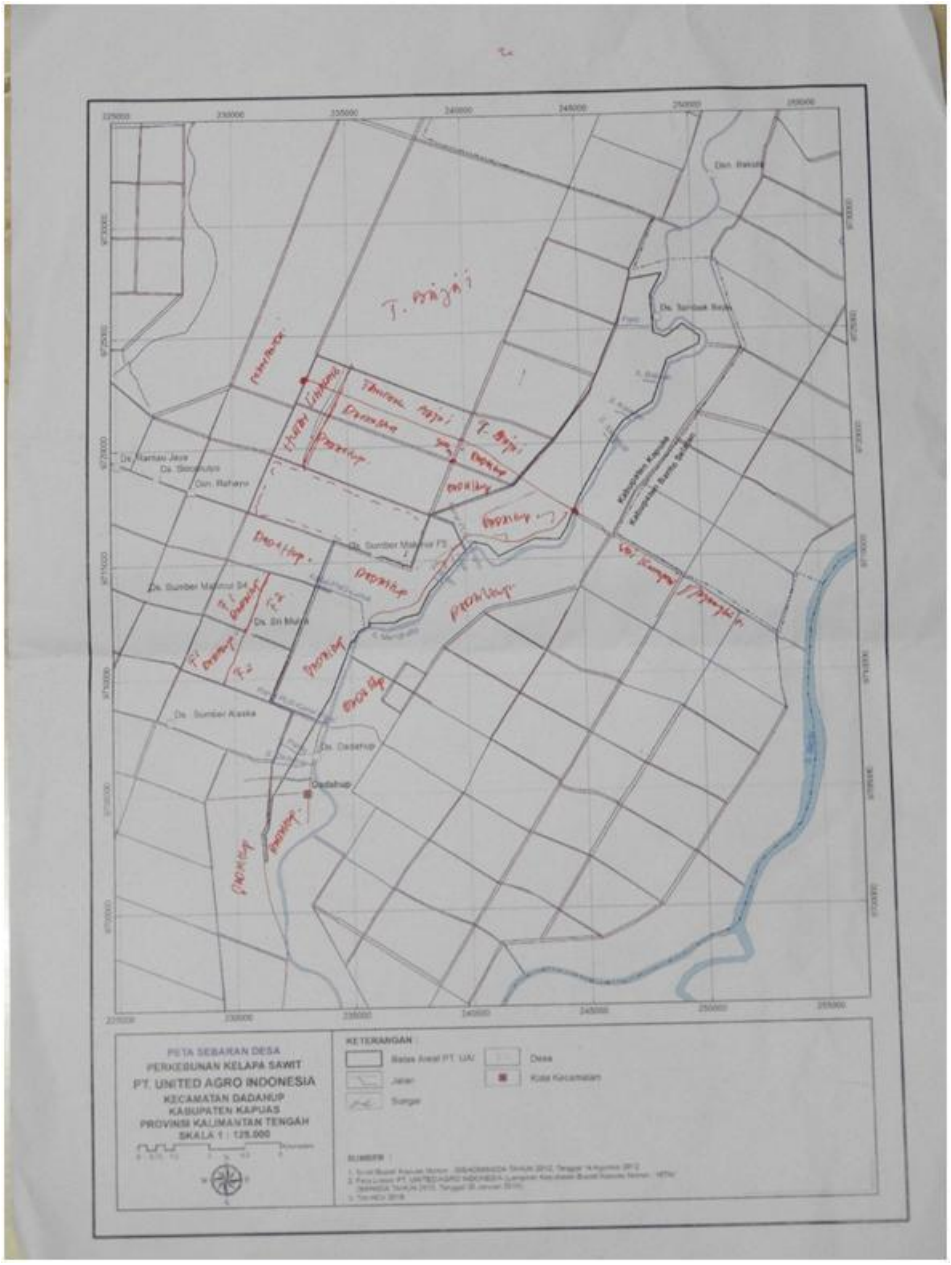


Figure 56. Sketch of Participatory Map

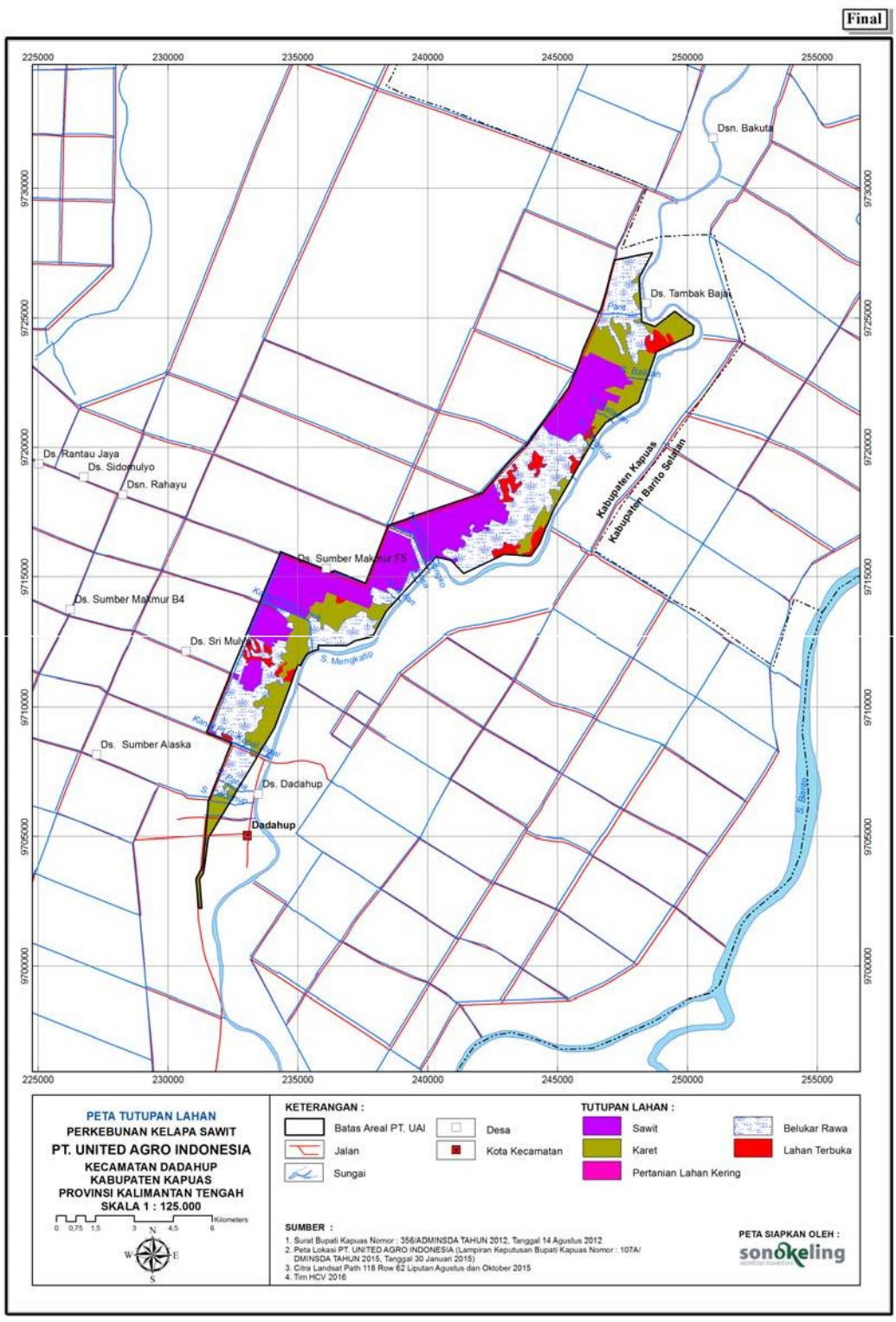


Figure 57. Participatory Map Sketch Overlay with GIS (Land Cover)

From Figure 57 it can be seen that the land cover in the PT UAI permit area that has not yet been cultivated is a dark forest and rubber plantation. This shows that many people have used their land to meet their needs by converting gelam forest into rubber plantations.

3.6.4. FPIC Phase 4 - Informing the Outcomes of Mapping and Work Plan of the Company

From the results of interviews, discussions / FGDs with residents and from the results of participatory mapping obtained several areas of the location permit of PT UAI which are still being acquired and utilized by residents. The people who are still acquiring land in the concession are then given information as a form of affirmation of rights for the community, that they have the right to know the risks and benefits obtained if their land is collaborated with an oil palm company. For companies, providing information is part of a commitment to transparency to ensure that people understand the risks to be faced in the future by providing relevant and adequate information.

The process of providing information related to the plan to open oil palm plantations by PT UAI has been carried out, but only limited to socialization / public consultation at the time of socialization of land acquisition, public consultation on HCV activities and so on. However, not all people understood it, some people still questioned about:

1) The hope of villagers when releasing their land, is there must be compensation for labor recruitment for residents / children, plasma plantation compensation, and compensation in the form of company assistance (CSR programs) for residents.

2) Villagers ask about the company's future work plans, such as work plans in:

    - Planning the realization of plasma plantations.
    - Clarity of CSR programs.
    - Management and monitoring of conservation areas (HCV-HCS).

From the explanation of the provision of information and company plans, at least the company has begun to prepare for these plans, such as in the preparation of the company's work plan program in the area of PT UAI's permit addition, preparing land acquisition SOPs, SOP for providing information to the public / stakeholders, SOP for handling complaints and conflicts, Plasma Plantation SOPs, CSR SOPs, and other SOPs that support the company's work plans in the future.

One of the work plans carried out by PT UAI company in the framework of land acquisition, is by conducting negotiation efforts in the process of land release. The company first socialized the company including related to land compensation or what is commonly referred to as Land Compensation (LAND COMPENSATION) with a compensation fee of Rp. 5 million / ha. However, from a survey of the surrounding villages, some of the hopes and desires of residents and considerations in the release of land include:

a) The company must conduct Land Compensation (LAND COMPENSATION) on the residents' land which the plan will be used as oil palm plantations and the value of the LAND COMPENSATION must be adjusted to the agreement or negotiation between the company and the direct land owner. And the LAND COMPENSATION process has been carried out by the company in accordance with the agreement.

b) The company and the community measure the land owned by residents in stages by involving the village head, RT / RW chairman, BPD, and the land owner through a participatory mapping process.

c) If the residents will release their land to the company, then the company must be able to recruit residents / children to be able to work in the company, built plasma plantations for residents and CSR assistance for village residents

d) The land will be inherited to his children, so that the LAND COMPENSATION process carried out by the company must be cautious.

e) With land acquisition the community hopes to get plasma

f) If a land conflict occurs, the company must be present in the process of resolving the conflict

Through FPIC, the community around PT UAI has no objection if their land gets a LAND COMPENSATION or GRTT from the company in the hope of improving the community's economy.

3.6.5. FPIC Phase 5 - Discussion Process by the Community to Make Decisions

A vital stage in FPIC is the process of discussion among the community to make decisions consciously, armed with adequate information and without coercion. Decisions taken must be free from external pressure, intimidation, coercion, manipulation, and also internal pressure from the village officials themselves.

The process of discussion in the community has been carried out through interviews and discussions / FGDs with stakeholders who have interactions or who are affected by the planned development and development of oil palm plantations by PT UAI. The summary of the results of the discussion process (interviews and discussions) on FPIC activities is as follows:

Dadahup Village

- There are still land issues between communities.
- The village head cannot force and depends on the will and negotiation between the company and residents.
- The company together with the residents of the Subvillage take joint land measurements / participatory mapping of shared land by involving village officials, land owners and land owners who border
- Expectations of Subvillage residents if releasing their land, so that the recruitment of labor for residents is a priority, reward smallholdings, and rewards in the form of company assistance (CSR programs) for residents.
- Companies have to give building Village Cash Land

Sri Mulya Village

- Land is a gift from the government during the transmigration program.
- Land has been certified
- The community supports the opening of land for PT UAI's plantations.

Sumber Alaska Village

- Land is a gift from the government during the transmigration program.
- Land has been certified
- The community supports the opening of land for PT UAI's plantations.

Sumber Makmur Village

- Land is a gift from the government during the transmigration program.
- Land has been certified
- The community supports the opening of land for PT UAI's plantations.

Tambak Bajai Village

- There are still land issues between communities.
- The village head cannot force and depends on the will and negotiation between the company and residents.
- The company together with the residents of the Subvillage take joint land measurements / participatory mapping of shared land by involving village officials, land owners and land owners who border

- Expectations of Subvillage residents if releasing their land, so that the recruitment of labor for residents is a priority, reward smallholdings, and rewards in the form of company assistance (CSR programs) for residents.
- In the process of resolving land conflicts, the company is there as much as possible so that it does not appear to be pitting a conflict community

From the discussion process that was carried out obtained several important points of joint decisions, namely:

1) If there is a conflict, the negotiation is carried out by involving village officials, the community and the company.
2) Company activities related to land such as HCV, HCS etc. are carried out with the community's knowledge and involve the community.
3) The socialization process needs to be further improved by the company
4) The hopes and desires of the villagers towards PT UAI, are:
   - Provide an effective explanation of PT UAI's oil palm plantation development plan activities before it starts;
   - Give priority to as far as possible the provision of employment opportunities to local communities who meet the requirements.
   - Companies must comply with customary rules regarding which land can be acquired and which cannot be acquired.
   - The company together with the villagers carried out a joint land measurement / participatory mapping of shared land.
   - The release and price of community land around PT UAI is 5 million / ha, including the types of plants in it.

3.6.6. FPIC Phase 6 - Summarizing the Results of Activities, Confirmation and Verification of Agreements

From the results of the FPIC 1 process activities to the FPIC 5 process, key points can be summarized including:

1) Stakeholders in the FPIC study area are rights holders (land owners without certificates / SKT / SPPT).
2) The most important representative institutions in the village are the village head, traditional leaders, RT, RW, BPD management, landowners related to village / Subvillage conflicts and the LAND COMPENSATION or GRTT process.
3) The need to establish a working group called the DESA TEAM which has a duty in land acquisition, LAND COMPENSATION or GRTT as well as in participatory mapping that involves a minimum of Kades, BPD, RT heads, RT heads, RW owners, and land owners and adjacent land owners.
4) Participatory mapping is carried out to identify important areas related to social HCVs (HCV 4, HCV 5 & HCV 6) and identification of land / village residents' land use or ownership in PT UAI's concession area.
5) Compilation of the company's work plan after the participatory mapping process and discussions with villagers / dusun, such as the time plan for the measurement of the residents' land in the concession, planning of plasma estate realization, clarity of CSR programs, Management and monitoring of conservation areas (HCV-HCS), as well as the company's work plan in an effort to overcome various kinds of social and environmental impacts.
6) Conducting a discussion process with the five villages (Dadahup Village, Sri Mulya, Sumber Alaska, Sumber Makmur and Tambak Bajai) with several important points on the decision to make such an FPIC process in FPIC stage 5.

CHAPTER 4. Summary of Management Plans

4.1. Team responsible for development and implementation of management plans

Show the key personnel that is involved during the development and implementation of management plans.

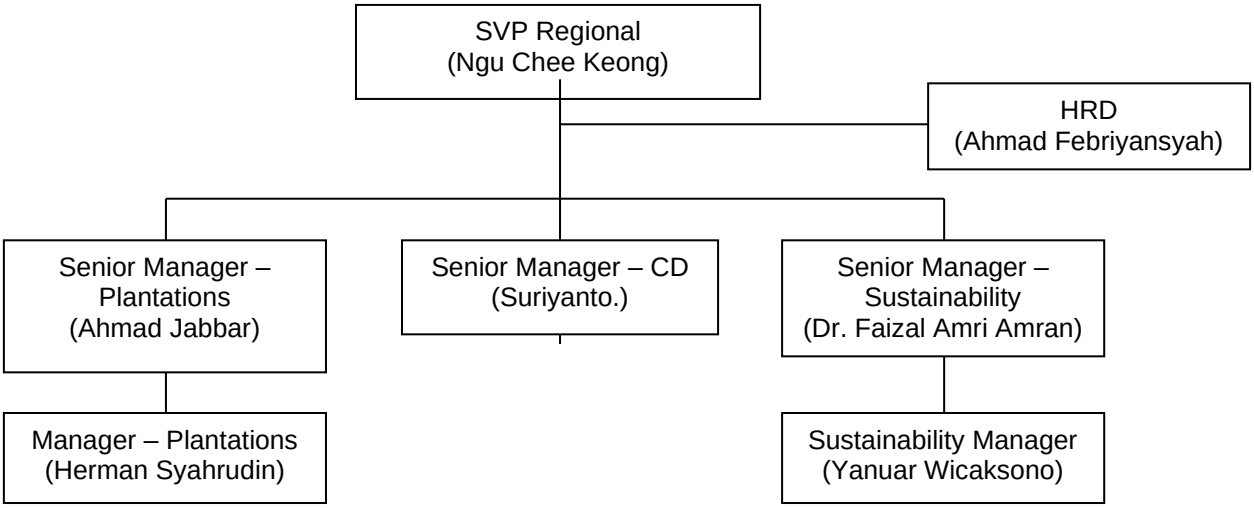


Figure 58. Team responsible for development & implementation of management plan

4.2. Stakeholder to be involved

Stakeholders are those who give or receive influence from the existence of oil palm plantations in PT UAI. The parties referred to in this study focus on the main stakeholders, those who are directly, significant and interactive and mutually provide stakeholders.

In addition to involving stakeholders in the identification of HCVs, PT UAI in future management and monitoring is also shared with stakeholders, such as conducting studies on the conservation of natural resources and ecosystems with BKSDA, communities and NGOs involved in the environment, coordinating with companies in around them, namely PT Globalindo Agung Lestari and the Forest Service in the management of HCV areas that are interconnected and coordinate and collaborate with communities and related institutions to prevent, protect, and overcome disruptions to rivers and their boundaries, and effective law enforcement.

4.3. Elements to be included in management plans

4.3.1. Elements to be included for SEIA

Category	Strategic issue	Community Expectations	Recommendation	Target party	Party involved
Critical	Land conflicts still occur between villages Conflicts over land ownership among communities has resulted in multiple land ownership	There is a mapping of the area of each village that enters PT UAI	• In-depth FPIC activities related to participatory mapping, stakeholder identification, involvement of villagers or landowners in participatory land measurement surveys • Socializing the results of land measurements to villagers or hamlet residents • LAND COMPENSATION / GRTT socialization • CSR programs in agricultural development	The entire village area is included in PT UAI	• PT UAI • Land owner • Village officials • District Government
	There are still people doing MCK (including) BAB, and clean water sources for cooking and drinking come from rivers Community limitations in accessing clean water facilities and infrastructure	Construction of bore wells	• The company will immediately make an integrated water governance plan that meets the community's water needs • Routine socialization related to the results of river water quality tests to villagers or subvillage	All villages around PT UAI	• PT UAI • Village officials • District Government • Environmental Agency
	Residents want that if they release their land for oil palm plantations, there will be compensation for plasma plantations	The development of smallholdings is carried out immediately	• Advanced FPIC related to decision making and agreement stages • Conduct MOU related to LAND COMPENSATION, GRTT and Plasma Gardens with villages or subvillage.	All villages The entire village area is included in PT UAI	• PT UAI • Land owner • Village officials • District Government • Cooperative Service

Category	Strategic issue	Community Expectations	Recommendation	Target party	Party involved
	People's hopes of owning the village treasury land	Development of village treasury land	• Socialization and realization of smallholdings for villagers • Socialization and realization of village treasury land for villagers • The company conducts outreach to the surrounding community to overcome the confusion in understanding and perception of the community about the realization of the partnership scheme through the pattern of plasma plantation development. • The company prepares a participatory plasma implementation plan by involving all relevant stakeholders, especially in coordination with the Village Heads and Adat Heads.	Dadahup village	• PT UAI • Village officials • District Government • Forestry Agency
	The negative perception of citizens is related to the LAND COMPENSATION plan	Socialization to the community	• Socializing the results of land measurements to villagers or hamlet residents • Land Compensation / GRTT socialization	The entire village area is included in PT UAI	• PT UAI • Village officials
Major	The community does not yet know for certain the boundaries of the area and the size of the village that is included in PT UAI	There is a mapping of the area of each village that enters PT UAI	• Socialization of PT UAI's work area boundaries • Installation of PT UAI's regional information board	The entire village area is included in PT UAI	• PT UAI • Land owner • Village officials • District Government
	Land ownership status does not yet have an official certificate, both SKT (Land Certificate) and SPPT (Land Use Statement)		• In-depth FPIC activities related to participatory mapping, stakeholder identification, involvement of villagers or landowners in participatory land measurement surveys		

Category	Strategic issue	Community Expectations	Recommendation	Target party	Party involved
	Residents assume that the land that they work on for agricultural and plantation cultivation in the area of the addition of a PT UAI permit is the property / inheritance of the previous parents		• Socializing the results of land measurements to villagers or hamlet residents • LAND COMPENSATION / GRTT socialization • CSR programs in agricultural development		
	The company puts up an information board on protected areas on community-owned land without socializing to landowners	Socialization and permission to the land owner	• Community outreach about HCV areas • Community involvement in the management of HCV areas	All villages around PT UAI	• PT UAI • Land owner • Village officials
	There is a perception that the company does not prioritize workers from surrounding villages	The workforce puts the surrounding community first	• Outreach to villagers or subvillage related to labor recruitment • Community training • Providing scholarships for outstanding students with agreements • The company proactively develops education / training activities to increase the capacity of community knowledge and skills	All villages around PT UAI	• PT UAI • Village officials • Labor offices
	In the process of resolving land disputes, there is an assumption that the conflicting communities are pitted by the company	The company is involved in resolving conflicts	• The company cooperates with the village government to solve problems	Tambak Bajai Village	• PT UAI • Land owner • Village officials
	Social jealousy between villages. Dadahup Village is the initial village of the current village so they	Dadahup Village is a priority because it is the main village	• Social mapping • Establishment of a planned CSR program for the entire village	Dadahup village	• PT UAI • Village officials

Category	Strategic issue	Community Expectations	Recommendation	Target party	Party involved
	expect full attention from the company				
	Residents' concerns related to water pollution due to the proximity of the company's oil palm plantations to the river	The company manages the waste well	• CSR programs in the health sector (fulfillment of clean water sources). • River border management CSR program • Routine socialization related to the results of river water quality tests to villagers or subvillage.	All villages around PT UAI	• PT UAI • Environmental Agency
	Negative perceptions (worries) of residents related to road damage due to frequent large vehicles	Road repair assistance	• CSR programs in the form of road repair assistance • Application of vehicle weight according to road quality	All villages around PT UAI	• PT UAI • Village officials • District Government • Public Works Agency
	Damaged village / hamlet road facilities. Most of the access roads to villages are still in the form of dirt roads and potholes				
	Socialization carried out by PT UAI is still very rare so that there are some people who do not know the whereabouts of PT UAI	Socialization to the village	• The top management regularly holds meetings with the village government	All villages around PT UAI	• PT UAI • Village officials
	Village conditions and locations, which are mostly difficult to access, cause the flow of goods and services to run very slowly	Road repair assistance	• Environmental CSR programs related to facilitation or heavy equipment assistance for road repair	All villages around PT UAI	• PT UAI • Village officials • District Government
Moderate	There is trauma in the community due to the process of buying and	Socialization of land compensation process	• In-depth FPIC activities related to participatory mapping, stakeholder identification, involvement of villagers	Tambak Bajai village	• PT UAI • Village officials • Land owner

Category	Strategic issue	Community Expectations	Recommendation	Target party	Party involved
	selling land by other people representing the land owner		or landowners in participatory land measurement surveys • Socializing the results of land measurements to villagers or hamlet residents • LAND COMPENSATION / GRTT socialization • CSR programs in agricultural development		
	The education level of the study village community is generally low Educational facilities in the villages around PT UAI are still very limited	Educational assistance	• CSR programs in the field of education both education and non formal education (agricultural counseling, fisheries counseling, etc.).	All villages around PT UAI	• PT UAI • Village officials • Education authorities
	The perception that the company does not value the people who struggle at the beginning to help the company	The parties that helped in the beginning of the existence of PT UAI took precedence in the recruitment process of workers	• Outreach to villagers or hamlets related to labor recruitment • Community training • Providing scholarships for outstanding students with agreements	Sumber Makmur Village	• PT UAI • Village officials
	The role and function of village institutions, traditional institutions that exist today are still minimal in the process of land acquisition	The village government has hopes that if there is a land acquisition process to be involved, not only when there are problems	• Revive village organizations or institutions through collaboration with the Village Government and Indigenous Leaders, Female Leaders, Youth Leaders, Religious Leaders, etc.	All villages around PT UAI	• PT UAI • Village officia
	There is no specific location for selling agricultural produce, such as the village market, so	Roadwork and CSR assistance	• Cooperation with the Village Government to organize the village market	All villages around PT UAI	• PT UAI • Village officials

Category	Strategic issue	Community Expectations	Recommendation	Target party	Party involved
	hamlet residents have difficulty selling the harvest. They are just waiting for buyers to come to the villages Minimal handling of post-harvest results		• Collaboration with farmers to sell agricultural products		• Department of Agriculture • District government
	In some villages there is only the highest level of education facilities available	CSR assistance in education	• CSR programs in education • Providing scholarships for outstanding students with agreements	All villages around PT UAI	• PT UAI • Village officials • Education office • District Government
	In each village / hamlet, the condition of health facilities and infrastructure is still very minimal	CSR assistance in the health sector	• CSR programs in the health sector including health education, such as PHBS (Clean and Healthy Behavior)	All villages around PT UAI	• PT UAI • Village officials • Public health Office • District Government
Minor	There is an issue that if the husband has worked in the company then the wife is not allowed	Every family member can work	• Outreach to villagers or hamlets related to labor recruitment • Community training • Providing scholarships for outstanding students with agreements	Tambak Bajai village	• PT UAI • Village officials
	PT UAI's CSR program joins PT GAL, so the community feels that PT UAI has not yet provided CSR	PT UAI provides CSR assistance	• Socialization to the community regarding social giving • There is evidence in the form of photos of each aid grant and an announcement at the village office	All villages around PT UAI	• PT UAI • Village officials
	Limited access of citizens to polindes or puskesmas locations due to road conditions and distance traveled	CSR assistance in the health sector	• CSR programs in the health sector in collaboration with the local Health Office	All villages around PT UAI	• PT UAI • Village officials • Public health Office

Category	Strategic issue	Community Expectations	Recommendation	Target party	Party involved
					• District Government

4.3.2. Elements to be included for HCV Assessment

HCV	Threats	Management Activities	Monitoring Activities	Monitoring Indicator & Periode	
1	• Wildlife hunting by the community. • Pollution of river water due to the use of chemicals (fertilizers and pesticides) from the company's oil palm plantations and community farms. • Planting exotic plants. • Weak law enforcement. • Decreased river water quality due to land clearing, washing / runoff of fertilizers & pesticides or other pollution from oil palm plantations that enter rivers. • Reduced habitat area due to land conversion in the form of shrubs and shrubs that are in the boundaries of rivers and swamps carried out by the community into gardens / agricultural fields. • Pollution of household waste.	• Mark boundaries and maintain boundaries of river border areas (10, 15 and 50 m width), swamps and flora and fauna protection areas in the field. • Internal and external HCV socialization. • Conduct prevention, protection, and control of disturbances to HCV management areas (wildlife hunting, area conversion, and land fires) through activities: installation and maintenance of HCV marks on strategic access points, as well as routine patrols. • Conduct further surveys to ascertain the status of HCV 1 species populations. • Maintaining river border (riparian area): (1) Rehabilitating and restoring river border areas that have land cover in the form	• Conduct annual monitoring of HCV 1 population in HCV management areas. • Develop a periodic monitoring system to ensure that wildlife hunting and land conversion activities are minimized. • Conduct periodic monitoring of the effectiveness of prevention, protection and mitigation activities against disturbances in HCV management areas that have been carried out. • Monitor periodic intensity of disturbance in the face of rivers, swamps, and flora and fauna protection areas, including illegal hunting, illegal logging, area conversion, and land fires.	• Monitoring of wildlife populations • Threat level and intensity of disturbance to wildlife populations and HCV • The level of effectiveness of threat prevention and mitigation efforts • Success rate of rehabilitation and restoration • Monitoring of orangutan populations and their habitats • Water quality and quantity as well as water level	• every 6 months • every 6 months (patrols are carried out every day by the task force team) • every 6 months • every 3 months • every 6 months • every 6 months (adjusted to environmental management

HCV	Threats	Management Activities	Monitoring Activities	Monitoring Indicator & Periode	
	• Construction of roads that cross the HCV area. • Creation of canals that cut contours • Expansion of Drying Areas • Land fires. • Construction of canals by communities that cut HCV areas	of open land; (2) On land cover in the form of oil palm plantations the practice of sustainable management of oil palm and mixed plantations is applied, ie land clearing is only carried out around plants with a radius of 1 m and not using herbicides and fertilizing is carried out by means of burial; (3) Making rorak or ridudan, (4) Tackling narrowing (due to rubbish and others) and siltation of river and river (5) Improvement of watershed "filters" especially along riverbanks by planting grasses or other plants that can close the surface tightly soil; • Coordinate with relevant agencies in the context of effective law enforcement to deal with hunting wildlife, especially protected and / or endangered mammal and bird species. • Conducting further surveys in the area of orangutan distribution that overlaps with the PT. UAI to ensure the existence of orangutans in the region. • Consult with local / regional experts on orangutans, such as FORINA, OFI or BOSF to ensure the existence of orangutans in the orangutan	• Conduct periodic monitoring of rehabilitation and restoration activities in river and swamp border areas. • Perform periodic monitoring of orangutan species (Pongo pygmaeus) in the Orangutan distribution area that overlaps with the permit area of PT. UAI • Monitoring the water level through monitoring the installed depth sticks. • Monitoring the results of socialization to the community around the location permit through questionnaires • Monitor the blocking channel conditions • Monitoring the water gate (water gate) and the depth of the water. • Monitoring and strengthening community institutions concerned with fire and the provision of infrastructure • Monitoring hotspots. • Develop joint monitoring with companies in the vicinity with the SMART (Spatial Monitoring and Reporting Tools) System	• The level of success in socializing HCV to the community • The successful strengthening of HCV management institutions and threats • The level of success in monitoring and preventing forest and land fires with the community • Success Rate of the SMART System (Spatial Monitoring and Reporting Tool)	and monitoring reports) • every 6 months • every 6 months • every 6 months • every 6 months

HCV	Threats	Management Activities	Monitoring Activities	Monitoring Indicator & Periode	
		distribution area that overlaps with PT. UAI • Disseminating information on peatlands • Conducting illegal canal blocking and cutting of contours • Installment a water gate (water gate) to regulate the flow of water in and out. • Maintain water level in the canals in accordance with government regulations 60 cm by installing water depth sticks in the main canal. • Developed the Fire Concerned Community (MAPI) program as a partner in controlling land fires. • Consult the Peat Restoration Agency (BRG) to ensure the KHG overlaps with the permit area of PT. UAI			
2	• Wildlife hunting by the community. • Pollution of river water due to the use of chemicals (fertilizers and pesticides) from the company's oil palm plantations and community farms. • Planting exotic plants. • Weak law enforcement. • Decreased river water quality due to land clearing, washing / runoff of fertilizers & pesticides or other pollution from oil palm plantations that enter rivers. • Reduced habitat area due to land conversion in the form of	• Mark boundaries and maintain boundaries of HCV 2 areas • Internal and external HCV socialization. • Conduct prevention, protection, and control of disturbances to HCV management areas (wildlife hunting, area conversion, and land fires) through activities: installation and maintenance of HCV marks on strategic access points, as well as routine patrols. • Conduct further surveys to ascertain the status of HCV 1 species populations.	• Conduct annual monitoring of HCV 1 population in HCV management areas. • Develop a periodic monitoring system to ensure that wildlife hunting and land conversion activities are minimized. • Conduct periodic monitoring of the effectiveness of prevention, protection and mitigation activities against disturbances in HCV management areas that have been carried out.	• Monitoring of wildlife populations • Threat level and intensity of disturbance to wildlife populations and HCV • The level of effectiveness of threat prevention and mitigation efforts	• every 6 months • every 6 months (patrols are carried out every day by the task force team) • every 6 months • every 3 months

HCV	Threats	Management Activities	Monitoring Activities	Monitoring Indicator & Periode	
	shrubs and shrubs that are in the boundaries of rivers and swamps carried out by the community into gardens / agricultural fields. • Pollution of household waste. • Construction of roads that cross the HCV area. • Creation of canals that cut contours • Expansion of Drying Areas • Land fires. • Construction of canals by communities that cut HCV areas	• Maintaining river border (riparian area): (1) Rehabilitating and restoring river border areas that have land cover in the form of open land; (2) On land cover in the form of oil palm plantations the practice of sustainable management of oil palm and mixed plantations is applied, ie land clearing is only carried out around plants with a radius of 1 m and not using herbicides and fertilizing is carried out by means of burial; (3) Making rorak or ridudan, (4) Tackling narrowing (due to rubbish and others) and siltation of river and river (5) Improvement of watershed "filters" especially along riverbanks by planting grasses or other plants that can close the surface tightly soil; • Coordinate with relevant agencies in the context of effective law enforcement to deal with hunting wildlife, especially protected and / or endangered mammal and bird species. • Disseminating information on peatlands • Conducting illegal canal blocking and cutting of contours • Install a water gate (water gate) to regulate the entry and exit of water.	• Monitor periodic intensity of disturbance in the face of rivers, swamps, and flora and fauna protection areas, including illegal hunting, illegal logging, area conversion, and land fires. • Conduct periodic monitoring of rehabilitation and restoration activities in river and swamp border areas. • Monitoring the water level through monitoring the installed depth sticks. • Monitoring the results of socialization to the community around the location permit through questionnaires • Monitor the blocking channel conditions • Monitoring the water gate (water gate) and the depth of the water. • Monitoring and strengthening community institutions concerned with fire and the provision of infrastructure • Monitoring hotspots. • Develop joint monitoring with companies in the vicinity with the SMART (Spatial Monitoring and Reporting Tools) System	• Success rate of rehabilitation and restoration • Monitoring of orangutan populations and their habitats • Water quality and quantity as well as water level • The level of success in socializing HCV to the community • The successful strengthening of HCV management institutions and threats • The level of success in monitoring and preventing forest and land fires with the community • Success Rate of the SMART System (Spatial Monitoring and Reporting Tool)	• every 6 months • every 6 months (adjusted to environmental management and monitoring reports) • every 6 months • every 6 months • every 6 months • every 6 months

HCV	Threats	Management Activities	Monitoring Activities	Monitoring Indicator & Periode	
		• Maintain water level in the canals in accordance with government regulations 60 cm by installing water depth sticks in the main canal. • Developing the Fire Concerned Community (MAPI) program as a partner in controlling land fires. • Consult the Peat Restoration Agency (BRG) to ensure the KHG overlaps with the permit area of PT. UAI			
3	• Pollution of river water due to the use of chemicals (fertilizers and pesticides) from the company's oil palm plantations and community farms. • Making Canal • Drying wetlands • Land Fire • Planting exotic plants. • Weak law enforcement. • Decreased river water quality due to land clearing, washing / runoff of fertilizers & pesticides or other pollution from oil palm plantations that enter rivers. • Reduced habitat area due to land conversion in the form of shrubs and shrubs that are in the boundaries of rivers and swamps carried out by the community into gardens / agricultural fields. • Making canals by people who cut HCV areas and cut contours. • Expansion of land drying	• Mark boundaries and maintain boundaries of river border areas (10, 15 and 50 m width), swamps and flora and fauna protection areas in the field. • Internal and external HCV socialization. • Conduct prevention, protection, and control of disturbances to HCV management areas (wildlife hunting, area conversion, and land fires) through activities: installation and maintenance of HCV marks on strategic access points, as well as routine patrols. • Maintaining river border (riparian area): (1) Rehabilitating and restoring river border areas that have land cover in the form of open land; (2) On land cover in the form of oil palm plantations the practice of sustainable management of oil palm and mixed plantations is	• Conduct periodic monitoring of the effectiveness of prevention, protection and mitigation activities against disturbances in HCV management areas that have been carried out. • Monitor periodic intensity of disturbance in the face of rivers, swamps, and flora and fauna protection areas, including illegal hunting, illegal logging, area conversion, and land fires. • Conduct periodic monitoring of rehabilitation and restoration activities in river and swamp border areas. • Monitoring the water level through monitoring the installed depth sticks. • Monitoring the results of socialization to the community around the	• The level of effectiveness of threat prevention and mitigation efforts • Threat level and intensity of disturbance to wildlife populations and HCV • Success rate of rehabilitation and restoration • Water quality and quantity as well as water level • The level of success in socializing to the community • The level of success in monitoring and	• every 6 months • every 6 months (patrols are carried out every day by the task force team) • every 3 months • every 6 months (adjusted to environmental management and monitoring reports) • every 6 months • every 6 months

HCV	Threats	Management Activities	Monitoring Activities	Monitoring Indicator & Periode	
	• Land fires.	applied, ie land clearing is only carried out around plants with a radius of 1 m and not using herbicides and fertilizing is carried out by means of burial; (3) Making rorak or ridudan, (4) Overcoming narrowing (due to rubbish and others) and river silting, and (5) Improvement of watershed "filters" especially along riverbanks by planting grasses or other plants that can cover land surface density; and • Disseminating information on peatlands • Conducting illegal canal blocking and cutting of contours • Install a water gate (water gate) to regulate the entry and exit of water. • Maintain water level in the canals in accordance with government regulations 60 cm by installing water depth sticks in the main canal. • Developing the Fire Concerned Community (MAPI) program as a partner in controlling land fires. • Consult the Peat Restoration Agency (BRG) to ensure the KHG overlaps with the permit area of PT. UAI	location permit through questionnaires • Monitor the blocking channel conditions • Monitoring the water gate (water gate) and the depth of the water. • Monitoring and strengthening community institutions concerned with fire and the provision of infrastructure • Monitoring hotspots. • Develop joint monitoring with companies in the vicinity with the SMART (Spatial Monitoring and Reporting Tools) System	preventing forest and land fires with the community • Success Rate of the SMART System (Spatial Monitoring and Reporting Tool)	• every 6 months
4	• Loss of land cover in the form of shrubs and shrubs in rivers and swamps. • Pollution of river water due to the use of chemicals (fertilizers	• Mark boundaries and maintain boundaries of river boundaries (10, 15 and 50 m width) and swamps in the field.	• Establish monitoring stations on the physical condition of rivers and freshwater swamps, and the	• Water quality and quantity as well as water level	• every 6 months (adjusted to environmental management

HCV	Threats	Management Activities	Monitoring Activities	Monitoring Indicator & Periode	
	and pesticides) from the company's oil palm plantations and community farms. • Weak law enforcement. • Company operational activities that will result in shallow river siltation, increase in river / canal water flow in the rainy season and a decrease in river / canal water flow in the dry season, and increase erosion. • Pollution of household waste. • Loss of water supply needed by downstream communities. • Land fires.	• Conduct prevention, protection and control of disturbances to HCV management areas through activities: installation and maintenance of HCV marks on strategic access points, and routine patrols. • Maintaining river border (riparian area): (1) Rehabilitating and restoring river border areas that have land cover in the form of open land; (2) On land cover in the form of oil palm plantations the practice of sustainable management of oil palm and mixed plantations is applied, ie land clearing is only carried out around plants with a radius of 1 m and not using herbicides and fertilizing is carried out by means of burial; (3) Making rorak or guludan, (4) Tackling narrowing (due to rubbish and others) and river silting, (5) Improving watershed "filters" especially along riverbanks by planting grasses or other plants that can close tightly ground level; and (6) Securing riverbanks that are prone to landslides, for example by planting relatively light and deep-rooted plants such as bamboo (if sediment originates from river bank erosion). • Rehabilitating and restoring freshwater swamp areas.	quality and quantity of river water. • Conduct periodic joint community monitoring of the physical condition of rivers and freshwater swamps, and the quality and quantity of river water. • Conduct periodic monitoring of disturbances by the community of the river and its watershed, as well as freshwater swamps. • Perodic monitoring erosion. • Conduct periodic monitoring of changes in land cover and natural regeneration in watersheds and freshwater swamps. • Monitor and evaluate SOPs that are applied periodically.	• Threat level and intensity of disturbance • natural regeneration monitoring with community • evaluation of SOP for community involvement in protected area management	and monitoring reports) • every 6 months (patrols are carried out every day by the task force team) • every 6 months • every 1 years

HCV	Threats	Management Activities	Monitoring Activities	Monitoring Indicator & Periode	
		• Develop and implement SOPs on the use of chemicals and SOP on waste management, as well as SOP on road maintenance and other facilities, as well as land clearing, planting and maintaining plants that are able to minimize erosion and maintain water quality. • Conducting illegal canal blocking and cutting of contours • Install a water gate (water gate) to regulate the entry and exit of water. • Maintain water level in the canals in accordance with government regulations 60 cm by installing water depth sticks in the main canal. • Developing the Community Concerned API (MAPI) program as a partner in controlling land fires. • Ensure road maintenance activities and other facilities, as well as land clearing have been carried out correctly in accordance with the SOP that has been prepared. • Considering that all border areas of rivers and freshwater swamps are currently controlled by the community, it is necessary to further discuss with the community through FPIC activities to obtain approval whether or not to compensate.			

HCV	Threats	Management Activities	Monitoring Activities	Monitoring Indicator & Periode	
		• Coordinate and collaborate with the community and related institutions in order to prevent, protect and overcome disruptions to rivers and their watersheds and freshwater swamps, and effective law enforcement. • Consult the Peat Restoration Agency (BRG) to ensure the KHG overlaps with the permit area of PT. UAI			
5	• Pollution of river water due to the use of chemicals (fertilizers and pesticides) from the company's oil palm plantations and community farms. • Weak law enforcement. • Pollution of household waste. • Loss of drinking water sources due to river water pollution. • Land fires.	• Installment of sign board to hunt a limited basis (eg: no hunting of protected animals and / or rare). • Control hunting activities carried out by the community. • Protect HCV 5 through clear boundary marking activities on the ground and routine patrols. • Prevention, protection and control of disturbances to HCV management areas (wildlife hunting, land conversion and land fires) through activities: installation and maintenance of HCV marks on strategic access points, and routine patrols.	• Develop and implement a participatory monitoring system to track the availability of basic community needs periodically. • Conduct periodic monitoring of community participation in reducing environmental impacts (for example: land conversion, land fires, and the use of fertilizers and pesticides in gardens / fields). • Conduct periodic monitoring of community perceptions of the quantity and quality of river water.	• Community participatory level of basic needs based on the system • Community participatory level in reducing negative environmental impacts • The level of public perception of water quality	• Every 6 months • Every 6 months • Every 6 months
6	• Land clearing activities, road construction and other facilities that do not pay attention to the distribution of ritual activities. • Loss of community access to the distribution of ritual acti	• Marking HCV 6 boundaries if permitted by the community and periodically maintaining boundary markers so that disruption to the distribution of ritual activities does not occur. • Involving community members during land clearing activities,	• Develop a simple HCV 6 monitoring system that is easily understood by the community. • The company, together with the community, conducts periodic (annual) monitoring of the distribution of ritual	• The intensity of community ritual activities in HCV 6 and its distribution	• Every 1 years

HCV	Threats	Management Activities	Monitoring Activities	Monitoring Indicator & Periode	
		especially those located adjacent to or adjacent to HCV 6 areas to avoid disruption to the distribution of existing ritual activities. • Develop SOPs for identification, boundary marking and maintenance of boundary markers in the field, as well as the protection of all HCV 6 sites together with the community. • Make it easy for all people to access the distribution of ritual activities.	activities and prepares its reporting.		

4.3.3. Elements to be included for soil analysis

Land suitability Class		limiting factors	SPT	Repair Recommendations	Area	
Symbol	Description			Input Type	Ha	%

S3	Land Based on Marginal	- Low nutrient availability - High acidity - Danger of seasonal floods - Stained land drainage	1,2,3,4,5	increasing fertility and decreasing the level of soil acidity through liming, controlling seasonal flood hazards by building flood control buildings and repairing blocked soil drainage by constructing drainage Canal that serve to lower the surface of the ground water, improve soil air system, regulate water circulation until there are additional elements nutrients and leaching of substances that are toxic to plants (organic acids, excess salt and possibly heavy metal deposits deposited from other places). Improvement of inhibiting factors will increase the land suitability class to be a sufficiently suitable potential (S2).	6.723,55	100 %

4.3.4. Elements to be included for carbon stocks and GHG emissions

No	Mitigation	Monitoring	Protected Area	PIC
1.	Marking participatory protected area boundaries	Maintenance of protected area boundary signs periodically (once every six months).	HCV – HCS area	GIS, Sustainability and Estate
2.	Socialization of boundary signs and protected areas to contractor and PT staff who handle land clearing, construction of roads and other facilities, and maintenance of oil palm plants, harvesting and transportation of ffb.	Understanding of contractor / UM staff is related to boundaries and boundaries of protected areas, extension services, and prevention and control of forest and land fires, illegal logging and encroachment in protected areas (socialization is carried out every 6 months)	HCV – HCS area	CD & Sustainability
3.	Socialization of protected areas to surrounding communities	Understanding of surrounding communities is related to the boundaries and boundaries of protected areas, education, and prevention and control of forest and land fires, illegal logging and encroachment in protected areas (socialization is carried out every 6 months)	HCV – HCS area	CD & Sustainability
4.	Prevention and control of fire and encroachment disturbances in protected areas through the establishment of task forces	Periodic patrol (every day during the dry season)	HCV – HCS area	Security & GIS
5.	Inventory and identify land cover in protected areas	Monitor the structure and composition of vegetation (vegetation inventory is carried out every 6 months)	HCV – HCS area	Sustainability & GIS
6.	Rehabilitation and enrichment planting in protected areas	Realization and percentage of life of plants planted in rehabilitation and enrichment activities (2 months after species enrichment).	HCV – HCS area	Sustainability and Estate

CHAPTER 5. REFERENCES

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RSPO New Planting Procedure . Endorsed by the Board of Governors on 20th November 2015

Social Impact Assessment (SIA) Report of PT United Agro Indonesia, date March 2020, Conduct and Prepare by Joko Mijiarto, S.Hut., MSi., West Java, Indonesia.

CHAPTER 6. INTERNAL RESPONSIBILITY

The oil palm grower signs to confirm that the necessary assessment have been done and completed in accordance to the relevant RSPO procedure

Sign of behalf SIA Assessor

Joko Mijiarto, S.Hut., MSi
Lead Assessor

Date : 15 April 2020

Sign of behalf HCV Assessor

Ir. Kresno Dwi Santosa, MSi
PT Sonokeling Akreditas Nusantara

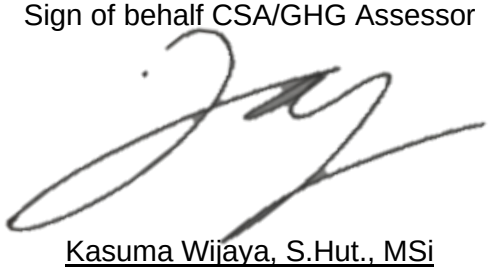
Date : 15 April 2020

Sign of behalf LUCA Assessor

Kasuma Wijaya, S.Hut., MSi
Lead Assessor

Date : 15 April 2020

Sign of behalf CSA/GHG Assessor



Kasuma Wijaya, S.Hut., MSi
Lead Assessor

Date : 15 April 2020

The implementation of the management and mitigation plan will be carried out, to follow each of the proposed management plan

Contact Person :

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